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Report to Congress

...itoring the Impact of Medicare Physician Payment Reform on Utililization and Access

1995

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EXECUTIVE SUMMARY

Background

This is the fifth annual report submitted to Congress in response to the Omnibus Budget Reconciliation Act of 1989 (Public Law 101-239) which amended the Social Security Act by adding Section 1848, "Payments for Physicians' Services."

The major intent of this legislation was to provide more rational and equitable payment for physicians' services provided under Medicare. The Medicare fee schedule (MFS) led to a shift of Medicare payments from procedural services to evaluation and management services and from urban areas to rural areas.

Section 1848(g)(7) requires the Secretary of the Department of Health and Human Services to monitor and report annually to Congress on changes in utilization and access, by population groups, geographic areas, types of services, and on possible sources of inappropriate use.

The 1995 report

For the 1995 report, the Health Care Financing Administration (HCFA) updated or (expanded) each of the 1994 analyses. In addition, new analyses are reported that explore the effect of socioeconomic status (SES) on utilization patterns. To analyze the effect of SES, area-wide income data on the ZIP code level obtained from the 1990 U.S. Census were linked to person-level Medicare data. The linked data were used to study utilization patterns and access to care across income groupings.

This report is divided into two major parts. Part I summarizes the new analyses of the effect of income on access to care. Part II summarizes the updated studies. Thirteen appendices, which provide full details of the studies, are included as attachments.

Six major policy issues addressed

This report addresses six policy issues:

- To what extent does health status -- as measured by mortality rates -- vary by race and income?
- To what extent does utilization of Medicare services vary by race and income?
- To what extent does standardization of income between black and white Medicare population groups reduce racial differences in mortality and utilization?
- Did the MFS invoke the kinds of payment changes anticipated?

- Did payment reform present new barriers for vulnerable populations groups?
- What have been the impacts of the MFS on physicians' practices?

Highlights

Part I

1. There are very substantial differences in the income distributions of Medicare beneficiaries across races. Twenty -seven (27) percent of all white beneficiaries fell into the highest income quartile but only 6 percent of all black beneficiaries fell into the highest income quartile In contrast, 19 percent of all white beneficiaries fell into the lowest income quartile while 73 percent of all black beneficiaries fell into the lowest income quartile.

2. The higher mortality rates for black beneficiaries compared to white beneficiaries indicate that health status is lower among black beneficiaries.

3. For black beneficiaries, the ambulatory physician visit rate is lower than for white beneficiaries ; in contrast for black beneficiaries the total hospitalization rate was higher than the rate for white beneficiaries . These utilization patterns suggest that black beneficiaries may experience more barriers to comprehensive and continuous care than white beneficiaries.

4. For many common procedures, such as coronary artery bypass graft (CABG), percutaneous transluminal coronary angioplasty (PTCA), and knee and hip replacements, utilization rates are higher for white beneficiaries than for black beneficiaries, suggesting that black beneficiaries are at risk of experiencing barriers to several referral-sensitive procedures.

5. The most important new knowledge gained from these analyses is that lower SES, in and of itself, is also a risk factor for all Medicare population groups, including white beneficiaries. The new analyses showed that:

   -- The rate of ambulatory physician visits declined 18 percent for white beneficiaries and 12 percent for black beneficiaries as income declined.

   -- Among black beneficiaries in the lowest income group, rates of referral-sensitive procedures such as PTCA were 24 percent lower than the rates for black beneficiaries in the highest income quartile. The corresponding difference for CABG was 16 percent.

   -- Among white beneficiaries in the lowest income quartile, the rate of hospitalization for hypertension was more than twice as high as the rate for beneficiaries in the highest income quartile.

-- The rate of bilateral orchiectomy was 43 percent greater for the least affluent white males than for the most affluent white males

6. Standardization of income across races showed that if the income distributions for black beneficiaries and white beneficiaries were equal, the racial differences in utilization rates for many services would decrease, although generally by only a modest amount. But, for some services, such as ambulatory physician visits, magnetic resonance imaging (MRI), and mammography, the standardization of income diminished appreciably the disparities by race -- indicating that low income among black beneficiaries plays a substantial role with regard to access to care for certain services.

Part II.

The important results from the studies performed for the 1994 report held true in the updated analyses. Three major conclusions in 1994 can again be reported in 1995:

1. The MFS has produced the kinds of shifts in payments that were anticipated.

2. For the vulnerable populations studied, no new barriers to care were found. However, there are continuing indications that many population groups face barriers to care.

3. Additional understanding is needed of barriers to care for vulnerable populations to further improve their access to care.

Future work

HCFA intends to expand its monitoring and analyses of access to care along three lines:

1. The SES studies will be refined by using multi-variate techniques that include additional SES variables from the U.S. Census, such as educational attainment.

2. The SES analyses will be refined by using the census tract as the unit of aggregation instead of the ZIP code. The feasibility of this effort depends upon the ability in HCFA to map current beneficiary residence information into census tract designations.

3. The current monitoring system will be improved to monitor additional indicators. For example, HCFA intends to monitor the use of all preventive services and hospitalizations for referral-sensitive conditions.

The 1995 Access Report to Congress

INTRODUCTION

This 1995 Report to Congress is the Secretary's fifth annual report submitted in response to the requirements of the Omnibus Budget Reconciliation Act of 1989 (OBRA '89) to monitor and report annually the impact of changes in Medicare physician payment on access to care.

OBRA '89 introduced significant changes in Medicare physician payment policy. The three major components of the law were: (1) the introduction of a Medicare fee schedule (MFS), which was implemented beginning January 1, 1992 under a transition period ending in 1996; (2) the establishment of limits on physicians' charges exceeding the fee schedule amount; and (3) the institution of target rates of growth in expenditures for physicians' services. The intent of these changes is to provide more rational and equitable payment for physicians' services provided under the Medicare program.

Section 1848(g)(7) of the Social Security Act requires the Secretary of the Department of Health and Human Services to monitor and report annually to Congress on changes in utilization and access, by population groups, geographic areas, types of service, and on possible sources of inappropriate utilization.

Payment reform is part of a continuum. Before the OBRA 1989 reforms were instituted, a number of significant changes were initiated in physician payment policy that affected, and will continue to afect, utilization and access.[1] Many other forces are also likely to continue to influence the demand for and supply of physicians' services received by Medicare beneficiaries, including the diffusion of new technology into the health delivery system. It is important, therefore, to view any changes found in access, utilization, and appropriateness in light of the many factors that may influence the health care system in general and Medicare in particular.

PREVIOUS REPORTS

The Health Care Financing Administration (HCFA) has taken a broad and varied approach to monitoring access to care. The 1994 Report to Congress summarized the results of eight studies. These studies drew on a number of measures of access to care in order to gain differing perspectives.

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[1]These include the implementation in 1975 of the Medicare Economic Index as a limit on increases in prevailing charges; the initiation in 1984 of the participating physician program to provide incentives for physicians to accept assignment; the introduction in 1987 of the Maximum Allowable Actual Charge (MAAC) limits which restricted the amount non-participating physicians could charge; the reductions in prevailing charges for overpriced procedures instituted for one group of proceedures in 1988 and for another in 1990; and the institution of fee schedules for radiology in 1989 and anesthesiology in 1990.

The principal sources of data are the Medicare Part B monitoring system, Part A data, and two national surveys.

Several vulnerable population groups that are identifiable in these data sources were selected for monitoring. These include beneficiaries who are: living under the poverty level; dually eligible for Medicare and Medicaid; black; disabled and under age 65 years of age; very old (i.e., age 85 and over); without supplemental health insurance; residing in rural areas; residing in areas designated as health professional shortage areas; and residing in areas expected to experience the greatest decreases in average Medicare fees.

The 1994 report showed that the introduction of the MFS produced the kinds of shifts in payments that were anticipated. In particular, there was a relative increase in allowed charges for visits and consultations and a relative decrease in allowed charges for procedure-based services. The report also showed that the introduction of the new payment system for physicians produced no new barriers to care for the vulnerable populations studied, although there were clear indications that many vulnerable groups under Medicare continue to face barriers to care.

The 1994 report concluded that effective monitoring of access to care requires the development of additional measures of access to care as well as better data sets and linkages to other information.

THE 1995 REPORT

Each of the 1994 analyses were updated (or expanded) and the findings are included in this report. It is important to note that the analyses were conducted by different researchers and were designed to provide varying perspectives on access to care for vulnerable populations. The researchers may have used different definitions, data sources, methodologies and study populations. Therefore, there will be variations across studies in estimates, such as total counts and rates of use. In some instances, we were unable to explain discrepancies between estimates. In general, however, the relationships between vulnerable populations and measures of access were consistent throughout and confirmed that no new barriers resulted from the changes in physician payment policy.

Additionally, the large differences by race shown in the 1994 report stimulated a new series of analyses that explore the effect of income on utilization patterns. In particular, analyses were designed to examine the extent to which disparities between black and white Medicare beneficiaries in procedures, such as coronary artery bypass surgery (CABG), are due to differences in socioeconomic status (SES). Three separate studies were designed to examine different aspects of the relationship between SES and access to care.

This report is divided into two parts:

Part I. Summary of the three new studies
Part II. Summary of the updated studies

PART I

Summary of three new studies examining the relationship between SES and access to care

BACKGROUND

Studies of the 1970s and 1980s that evaluated the impact of Medicare and Medicaid on the enrolled populations showed that these programs have gone a long way toward equalizing access to care (e.g., Long and Settle, 1984; Link et al, 1982, Davis, 1991; Ruther and Dobson, 1981). Moreover, the introduction of new payment policies in Medicare, such as the hospital prospective payment system and the physician fee schedule, has not had a detrimental impact on access to care.

However, the in-depth monitoring of Medicare services, from the period before the introduction of physician payment reform and continuing onward, has shown differences in the utilization experience of several vulnerable subgroups of the Medicare population. For example, black beneficiaries have substantially lower rates of use of many procedures performed in the hospital, such as CABG and hip and knee replacement, that may reflect differences in access to these procedures. At the same time, black beneficiaries have higher rates of certain procedures that are considered non-elective, such as bilateral orchiectomy (performed primarily for advanced stage prostate cancer) and excisional debridement (removal of tissue, usually related to decubitus ulcers). The need for these procedures may reflect delayed diagnosis or initial treatment, or inadequate medical and/or follow-up care.

Differences by race in utilization patterns are likely to reflect, in part, differences in SES, which, in itself, is associated with health status. For example, ongoing surveys that assess the relationship between income and health status, such as the National Health Interview Survey and the Medicare Current Beneficiary Survey, have shown that persons living at or below the poverty level have significantly poorer levels of health than persons living above the poverty level.

In addition, differences in SES may also affect access to care. Providers, in some instances, may offer certain treatment options to higher income patients when there are associated costs. At the same time, beneficiaries with greater educational attainment may be more likely to know about newer medical treatments and be more likely to raise questions about treatment options with their physicians. Higher income beneficiaries are also likely to live in areas with greater access to health care resources and to have sufficient financial resources to cover deductibles and other cost-sharing requirements or to have additional insurance that covers the cost-sharing.

For this report, several analyses were performed to understand the effects of SES on access to and utilization of services by white beneficiaries and black beneficiaries. In particular, analyses were conducted to determine the extent to which standardization of income between white and black beneficiaries would reduce differentials in mortality rates and in utilization of services.

APPROACH USED IN THE ANALYSES

To study the relationship between utilization of specific procedures, race, and SES, a very large person-level data base is needed that contains (a) socioeconomic measures such as income, education, or occupation and (b) utilization data. While major health care surveys collect information on SES variables, sample sizes are generally not large enough to monitor utilization patterns in any detail. The Medicare administrative data base covers 37 million persons and contains sufficient information to monitor, in detail, patterns of utilization, but SES information is not included in the Medicare enrollment files. The only beneficiary information available is age, gender, race (currently, codes for white, black, and other races are used) and State, county, and ZIP Code of residence. To overcome this limitation and obtain a large enough data set with SES variables and utilization information, HCFA linked information from the 1990 U.S. Census aggregated to the ZIP Code level with person-level data from Medicare claims files, which contain utilization information for beneficiaries receiving services in the fee-for-service sector.

Clearly, person-level data would provide a more precise measure of income. Any proxy measure of income is likely to have limitations. However, the rationale for linking U.S. Census data with Medicare administrative data came from a study by N. Krieger (1992) entitled, "Overcoming the absence of socioeconomic data in medical records: validation and application of a census-based methodology." The study was designed specifically to test whether area-level data could be used in lieu of individual SES data. The results of analyses based on person-level data obtained from a large health maintenance organization (HMO) were compared with the results of analyses based on 1980 aggregate data for census-tracts and block groups comprising that HMO. The study concluded that U.S. Census area-level data offer a valid and useful approach to overcoming the absence of individual SES data.

For this report, HCFA used median household income information at the ZIP Code level from the 1990 U.S. Census and (a) "assigned" to each white Medicare beneficiary living in a specific ZIP Code area the median income for white persons age 65 and over in that ZIP Code area and (b) "assigned" to each black beneficiary the median income for black persons age 65 and over in that ZIP Code area. All beneficiaries of both races were then combined and grouped into income quartiles; the lowest 25 percent of all beneficiaries had annual incomes of $13,100 or less while the highest 25 percent of beneficiaries had incomes of $20,500 or more. A larger number of income breaks, such as quintiles, would have produced less stability in the data when the rates of less frequent procedures were being analyzed by race, gender, and income.

The new studies address three specific issues not addressed in previous HCFA analyses. For Medicare beneficiaries who are age 65 years or over:

(1) To what extent does health status -- as measured by mortality rates -- vary by race and income?

(2) To what extent does utilization of Medicare services vary by race and income for:
- -- ambulatory physician visits?
- -- total hospitalizations?
- -- heart and vascular disease hospitalizations?
- -- procedures performed in the hospital?

(3) To what extent does standardization of income between black and white Medicare population groups reduce racial differences in mortality and utilization?

Highlights of these studies follow.

MAJOR FINDINGS

Establishing four equal income groupings based on the entire Medicare aged population resulted in markedly different distributions by race. As shown in Figure 1, white beneficiaries are nearly evenly distributed across the four income quartiles, although only 19.3 percent fell into the lowest income quartile. In contrast, black beneficiaries were very unevenly distributed; 73.3 percent fell into the lowest income quartile and only 6.2 percent fell into the highest income quartile. See Table 1 at the end of this report and Appendix I for details.

Question 1: To what extent does health status -- as measured by mortality rates -- vary by race and income?

Figure 2 shows 1993 mortality rates for Medicare beneficiaries age 65 and over, by race, sex and income. (Rates are age-adjusted.) Men of either race have higher mortality rates than women of either race. Black men have higher mortality rates than white men; similarly, black women have higher mortality rates than white women. The overall age-adjusted mortality ratio (black:white) was 1.18 for men and 1.16 for women. (That is, black men had 18 percent higher mortality than white men; black women had 16 percent higher mortality than white women.)

Income differentials. Except for black women, beneficiaries in the lowest income quartiles had higher mortality rates than those in the highest income quartiles.

White men experienced the most marked differences by income; in the lowest income quartile ($13,100 or less annually in 1990) white men had a mortality rate that was 19 percent greater than white men in the highest income quartile ($20,501 and over). This means that the differential in mortality rates (19 percent) between the poorest white men and the most affluent white men was of a similar magnitude to the differential between the races (18 percent for men and 16 percent for women).

White women and black men in the lowest income quartiles had a mortality rate that was only a little higher (about 5-6 percent) than the corresponding rate for that gender and race in the highest income

quartile. For black females, there was no consistent pattern across income quartiles. See Table 2 at the end of this report and Appendix I for details on mortality rates.

In the data on mortality, discussed above, and in the data on utilization, which follows, an income effect tends to be more evident for white persons than for black persons. Conjectures about why this may occur will be discussed at the end of this section.

Question 2: To what extent does utilization vary by race and income?

In the following discussions, utilization rates are analyzed in terms of variations by race and income.

Ambulatory physician visit rates

Figure 3(a) shows ambulatory physician visit rates for 1993.

Race. The overall ambulatory visit rate was higher for white beneficiaries than for black beneficiaries. In the two highest income quartiles, ambulatory visit rates were greater for white beneficiaries than for black beneficiaries; however, in the two lowest income quartiles, ambulatory visit rates were similar for both races. Overall, the ratio (black:white) of the ambulatory visit rates was 0.89. That is, the ambulatory visit rates for black beneficiaries was 11 percent lower than the rate for white beneficiaries.

Income. For each racial group, the ambulatory physician visit rates tended to decline as income declined; white beneficiaries in the lowest income quartile had ambulatory physician visit rates that were 18 percent less than those in the highest income quartile while the corresponding differential for black beneficiaries was 12 percent.

At the same time, the emergency room (ER) physician visit rate was 45 percent higher for black beneficiaries than for white beneficiaries. Moreover, the ER visit rate tended to increase as income declined. However, for both black beneficiaries and white beneficiaries, the rate of ER visits was low, comprising only 5 percent of all ambulatory visits. See Table 3 and Appendix I for details.

Overall hospital discharge rates

Figure 3(b) shows hospital discharge rates for 1993.

Race. In contrast to the pattern observed for ambulatory physician visits, the overall hospitalization rate was 14 percent higher for black beneficiaries than for white beneficiaries. That is, the black:white ratio = 1.14.

Income. For white beneficiaries, the rate of hospitalization increased markedly as income declined; for black beneficiaries there was no consistent pattern by income.

Hospital discharge rates for heart disease

Discharge rates in 1993 are shown for ischemic heart disease in Figure 4(a) and for congestive heart failure in Figure 4(b).

Race. These two heart conditions exhibit different hospital discharge patterns by race. The ischemic heart disease discharge rate was 26 percent higher for white beneficiaries than for black beneficiaries (overall black:white ratio = 0.74), in contrast, the congestive heart failure discharge rate was 37 percent higher for black beneficiaries (overall black:white ratio = 1.37).

Income. For white beneficiaries, hospitalization rates for both diagnoses increased as income declined. Compared to the highest income quartile, the rate for the lowest quartile was 28 percent greater for ischemic heart disease and 41 percent greater for congestive heart failure. For black beneficiaries income differentials were less pronounced. See Table 4 at the end of this report and Appendix II for more details.

Hospital discharge rates for hypertension

Race. Hospital discharge rates for hypertension were more than twice as high for black beneficiaries than for white beneficiaries (overall black:white ratio = 2.35).

Income. There was no notable pattern for black beneficiaries by income quartiles. For white beneficiaries the pattern was striking; in the lowest income quartile, the rate for white beneficiaries was more than twice the rate of white beneficiaries in the highest income quartile.

PTCA and CABG procedures

The 1993 procedure rates are shown in Figure 5(a) for percutaneous transluminal coronary angioplasty (PTCA) and in Figure 5 (b) for CABG. The most frequent indication for these procedures is ischemic heart disease.

Race. For both procedures, the rates for black beneficiaries were less than half the rates for white beneficiaries, which may reflect, to some extent, the lower rate of ischemic heart disease hospitalizations among black beneficiaries (overall black:white ratio for CABG = 0.40; black:white ratio for PTCA = 0.46)

Income. For white beneficiaries, there was not much of an income effect for these two procedures.

For both procedures, black beneficiaries in the lowest income quartile had substantially lower rates than black beneficiaries in the highest quartile - - the differential between the highest and lowest income quartiles for CABG rates was 16 percent and for PTCA, 24 percent. See Table 5 at the end of this report and Appendix II for details

Selected Surgical Procedures

Table 6 at the end of this report shows 1993 rates of utilization for six common procedures: prostatectomy, cholecystectomy, repair of inguinal hernia, simple/radical mastectomy, hysterectomy, and appendectomy.

Race. Compared to the differentials found by race for the revascularization procedures, the differentials are less marked, but notable in several of these more traditional procedures. The black:white ratio of the use rates ranged from 0.66 for hysterectomy to 1.03 for prostatectomy.

Income. For all but one of the procedures, the differentials by income are relatively small for both black and white beneficiaries. For example, the rates of simple/radical mastectomy are nearly the same at every income level. The one exception is cholecystectomy. For white beneficiaries in the lowest income quartile the rate was 33 percent higher than the rate in the highest income quartile, for black beneficiaries the corresponding figure was 14 percent.

Bilateral Orchiectomy

Bilateral orchiectomy is a procedure identified as one of the few in-hospital procedures that has a substantially higher rate for black beneficiaries than for white beneficiaries.

Race. As shown in Figure 6 and Table 7, rates in 1993 for bilateral orchiectomy were more than twofold greater for black beneficiaries than for white beneficiaries. The rate for black beneficiaries was 2.03 procedures per 1,000 enrollees and for white beneficiaries the rate was 0.83 procedures per 1,000, or a black:white ratio of 2.45.

Income. Although across income quartiles there were no consistent patterns evident for black beneficiaries, there were marked differences by income for white beneficiaries. The rate of bilateral orchiectomy increased steadily as income declined. The rate of bilateral orchiectomy for white men in the lowest income quartile was 43 percent greater than the rate for white men in the highest income quartile.

Electronic Portal Imaging

The effect of race and income on seven procedures that were identified as undergoing adaptations and various changes was also studied. (These seven procedures were not restricted to those performed in the hospital.) It was hypothesized that rates would be higher for beneficiaries in higher income quartiles.

Figure 7 shows 1993 procedure rates for "electronic portal imaging," one of the seven changing procedures studied.

Race. The rate of electronic portal imaging was 17 percent lower for black beneficiaries than for white beneficiaries (overall black white ratio = 0 83)

Income There was a decided income effect. The procedure rate for white beneficiaries in the lowest income quartile was 31 percent lower than the rate for the highest income quartile. The corresponding differential for black beneficiaries was 23 percent See Table 8 at the end of this report and Appendix III for details

These analyses of utilization of Medicare services show that patterns by race often vary substantially by type of service and across income quartiles Next examined is the effect of racial differences in income distributions on the observed black:white ratios.

Question 3. To what extent does standardization of income between black and white beneficiaries reduce racial differences in mortality rates and utilization of Medicare services?

As shown earlier in this report, black beneficiaries and white beneficiaries have very different income distributions. It is generally believed that income (as a measure of SES) affects access to care. To determine the effect of differences by race in the income distributions, income was standardized by assuming that 25 percent of the black population and 25 percent of the white population fell into each income quartile.

If income differences have an appreciable effect on the racial differences observed in mortality rates and utilization rates, income standardization will adjust the "crude" rates for white beneficiaries and black beneficiaries to rates that are closer to each other (that is, the black:white ratios will be closer to 1.00). However, it is important to observe that income standardization adjusts the income distributions only, leaving the race-specific procedure rates unaffected. Consequently, income standardization can change the black:white ratios and bring them closer to 1.00 if, and only if, the race-specific rates are at least equal at some of the income quartiles.

Table A shows the black:white ratios for mortality and utilization before and after income standardization. It is apparent that income standardization tended to have a relatively small effect on mortality rates. The black:white ratio of mortality rates for men, which was 1.18, was reduced only a small amount after income standardization to 1.16. The black:white ratio of mortality rates for women (1.16) was not affected at all by income standardization (see Table 2). This is explained by the fact that at each income quartile mortality rates for black men were higher than for white men. Thus, standardizing the income distribution by race would be expected to have only a minimal effect in reducing the black:white mortality ratio.

With regard to utilization, income adjustment generally changed the black:white ratio in the expected direction, although not always. Often the change was slight. For the total hospital discharge rate, the black:white ratio changed from 1.14 to 1.15 with income standardization. The black:white ratio for hospitalization for ischemic heart disease changed from 0.74 to 0.78, while the ratio for congestive heart failure changed from 1 37 to 1.34 with standardization (see Table 4).

4 For many common procedures, such as coronary artery bypass graft (CABG), percutaneous transluminal coronary angioplasty (PTCA), and knee and hip replacements, utilization rates are higher for white beneficiaries than for black beneficiaries, suggesting that black beneficiaries are at risk of experiencing barriers to several referral-sensitive procedures.

5. The most important new knowledge gained from these analyses is that lower SES, in and of itself, is also a risk factor for all Medicare population groups, including white beneficiaries. The new analyses showed that:

   -- The rate of ambulatory physician visits declined 18 percent for white beneficiaries and 12 percent for black beneficiaries as income declined.

   -- Among black beneficiaries in the lowest income group, rates of referral-sensitive procedures such as PTCA were 24 percent lower than the rates for black beneficiaries in the highest income quartile. The corresponding difference for CABG was 16 percent.

   -- Among white beneficiaries in the lowest income quartile, the rate of hospitalization for hypertension was more than twice as high as the rate for beneficiaries in the highest income quartile.

   -- The rate of bilateral orchiectomy was 43 percent greater for the least affluent white males than for the most affluent white males.

6. Standardization of income across races showed that if the income distributions for black beneficiaries and white beneficiaries were equal, the racial differences in utilization rates for many services would decrease, although generally by only a modest amount. But, for some services, such as ambulatory physician visits, magnetic resonance imaging (MRI), and mammography, the standardization of income diminished appreciably the disparities by race -- indicating that low income among black beneficiaries plays a substantial role with regard to access to care for certain services.

PART II.

Summary of the updated studies that monitor utilization and access

BACKGROUND

The Secretary's 1994 Report to Congress summarized the major findings from eight studies that were designed to monitor utilization and access following the implementation of the MFS These studies focus on monitoring the impact of the MFS on several vulnerable population groups

- **Beneficiaries who are living under the poverty level**, who may face barriers to care because of income.
- **Beneficiaries dually eligible for Medicare and Medicaid**, who may face barriers to care because of income and health status.
- **Black beneficiaries**, who may face racial or socioeconomic barriers.
- **Disabled beneficiaries under age 65 and very old beneficiaries,** who may face barriers because they have greater levels of chronic illnesses and continuing care needs, or because of their frailty.
- **Beneficiaries without supplemental health insurance,** who may face barriers from out-of-pocket costs. (Increases in physicians' fees for visits automatically increase beneficiary coinsurance.)
- **Beneficiaries residing in rural areas,** because the supply of physicians in rural areas is lower than average.
- **Beneficiaries residing in areas designated as health professional shortage areas (HPSAs).**
- **Beneficiaries residing in areas expected to experience the greatest decreases in average Medicare fees**, because the supply of services might be curtailed.

To gain a broad perspective, a number of measures are being monitored:

- Ambulatory physician visit rates.
- Percent of persons reporting a health condition and not receiving any care in the previous years.
- Use of preventive services.

- Hospitalization rates for conditions that are considered sensitive to appropriate and continuing ambulatory care
- Use of referral-sensitive procedures

The major data sources being used to monitor utilization and access are the Medicare Part B monitoring files, Medicare Part A data, Medicare enrollment data, and two national surveys: the Medicare Current Beneficiary Survey and the National Health Interview Survey sponsored by the National Center for Health Statistics.

All eight studies in the 1994 access report have been updated as part of the monitoring of the implementation of the MFS. One study has also been expanded to analyze changes in the treatment of patients hospitalized with stroke or acute myocardial infarction (AMI) after the MFS was implemented. Six of these studies were prepared by HCFA staff, and two (including the expanded study) have been conducted under a cooperative agreement with the Center for Health Economics Research (CHER).

These studies were designed to answer questions 4-6 (listed below) that address major policy issues relating to the implementation of the MFS:

4. Did the MFS invoke the kinds of payment changes anticipated?

5. Did payment reform present new barriers for vulnerable populations groups?

6. What have been the impacts of the MFS on physicians' practices?

The major findings of the updated studies are presented in Tables 9-23 at the end of this report. These tables, containing the latest available data, are similar to the tables presented in the 1994 report.

The complete studies are included as Appendices IV - XII. In addition, Appendix XIII provides information on other relevant activities and future work. A brief overview of the latest findings that address the three major policy issues follows.

FINDINGS

Question 4. Did the MFS invoke the kinds of payment changes anticipated with regard to shifts of Medicare payments from procedural services toward evaluation and management services?

The updated studies again show that the MFS produced the kinds of shifts in payment that were anticipated.

For example, between 1992 and 1993, allowed charges for Part B claims increased 9 3 percent for medical visits and consultations while they declined 2 4 percent for surgery, radiation therapy, anesthesia and assistants at surgery See Tables 9-12 and Appendix IV As shown in Table 13 (also Appendix V), between 1992 and 1993, the rate per 1,000 beneficiaries declined for several procedures

Question 5. Did payment reform present new barriers for vulnerable populations?

The updated studies again show that for the vulnerable populations studied no new barriers to care were found However, there continue to be numerous indications that many population groups face barriers to care Several examples follow.

In 1992, outpatient visits in HPSAs were significantly lower than in non-shortage areas. This was also true for: rural poor areas than for non-poor areas; for black beneficiaries than for white beneficiaries; for those 85 years of age and over than for those under 85; and for all rural areas than for urban areas. See Table 14 for details.

As noted in previous reports, insurance coverage plays a role in access to care. Medicare beneficiaries 65 years of age and over without private supplementary insurance or other public program coverage are less likely to see a physician during the year. This was also true of the uninsured ages 18-64. See Table 15 and Appendix IX.

Moreover, the disabled under Medicare had higher proportions of persons reporting a health problem and not receiving care than the aged. Of those disabled with a health problem and not receiving care, 71.4 percent (or 12.2 percent of all disabled) reported financial barriers as reasons for not receiving care. See Table 16 and Appendix VIII.

The use of Medicare-covered preventive services in 1992 tended to be lower for many vulnerable groups. In 1992 the rate of mammograms was lower in HPSAs, in poor areas, for black beneficiaries, for those dually-eligible for Medicare and Medicaid, and for rural residents. See Table 17 and Appendix VII.

For every vulnerable population group studied, the rate of hospitalization for ambulatory care sensitive (ACS) hospital admissions in 1993 was higher than for the nonvulnerable population. That is, ACS hospital admission rates were significantly higher in HPSAs, in poor areas, for black beneficiaries, for the dually eligible, for the disabled under Medicare; for those age 85 years and over; and for rural residents. Similar findings were also reported for ACS hospital admissions in 1991 and 1992. See Table 18 and Appendix VII.

The 1993 data for the major in-hospital procedure show that the differential by race has been decreasing since 1990. The lowest 1993 ratios are for heart and vascular procedures: CABG (0.41), PTCA (0.46); and cardiac endarterectomy (0 31) See Table 19 and Appendix VI.

Between 1991 and 1992 there was no decline in the rate of major tests performed during the initial stay for patients hospitalized with stroke. However, some of the vulnerable subgroups had lower rates of certain of these tests. For example, the rate of MRI brain scans was lower than average for rural beneficiaries and for the dually eligible. See Table 20 and Appendix XII.

Question 6. What have been the impacts of the MFS on physicians' practices?

The updated analyses show that caseload for physicians in primary care and medical specialties has tended to increase more than for surgeons. Also, the updated analyses show that mean allowed charges per physician in the medical specialties have tended to increase more between 1992 and 1993 than the mean allowed charges per physician in other specialties. See Tables 21 and 22 for details and Appendix XI.

Although not attributable to the MFS, Table 23 presents trends in the ratio of medical specialists to the number of Medicare beneficiaries. This ratio has increased since 1984 for the U.S. as a whole and for metropolitan areas. However, for nonmetropolitan areas this ratio has changed little since 1991. See Table 23 and Appendix X.

CONCLUSIONS: Part II

From the continuing broad perspective being used for monitoring utilization and access to care for Medicare beneficiaries, the conclusions drawn from the 1994 report hold true for this report:

1. The MFS has produced the kinds of shifts in payments that were anticipated.

2. For vulnerable populations studied, no new barriers to care were found. However, there are continuing indications that many population groups face barriers to care.

3. Additional understanding is needed of barriers to care for vulnerable populations to further improve their access to care.

FUTURE WORK

HCFA intends to expand its monitoring and analyses of access to care along three lines:

1. The SES studies will be refined by using multi-variate techniques that include additional SES variables from the U.S. Census, such as educational attainment.

2. The SES analyses will be refined by using the census tract as the unit of aggregation instead of the ZIP Code. The feasibility of this effort depends upon the ability in HCFA to map current beneficiary residence information into census tract designations.

3. The current monitoring system will be improved to monitor additional indicators. For example, HCFA intends to monitor the use of all preventive services and hospitalizations for referral-sensitive conditions

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The individual analyses were prepared by HCFA staff except for three prepared under a cooperative agreement with the Center for Health Economics Research by Margo Rosenbach, Ph.D., Janet Mitchell, Ph.D., Rezaul Khandker, Ph.D., Killard Adamache, Ph.D., and Diane McPartlin. Individual HCFA analyses were prepared by William Sobaski and Benson Dutton; Ann Meadow, Sc.D.; Paul Eggers, Ph.D.; Leslye Fitterman, Ph.D. and Thomas Reilly, Ph.D.; Lawrence Kucken, Joan Warren, Ph.D., and Renee Mentnech.

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This report, summarizing the individual analyses, was written by Marian Gornick, Paul Eggers, Thomas Reilly, and Renee Mentnech. Cheryl Hickman was responsible for the preparation of the manuscript.

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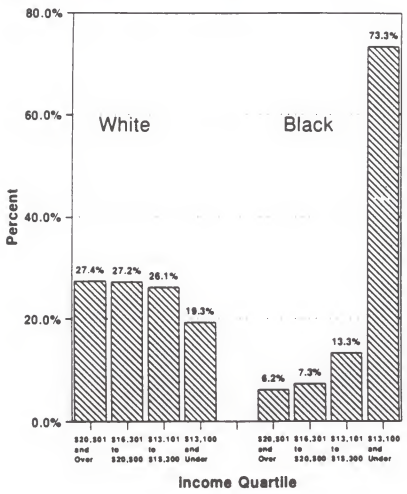
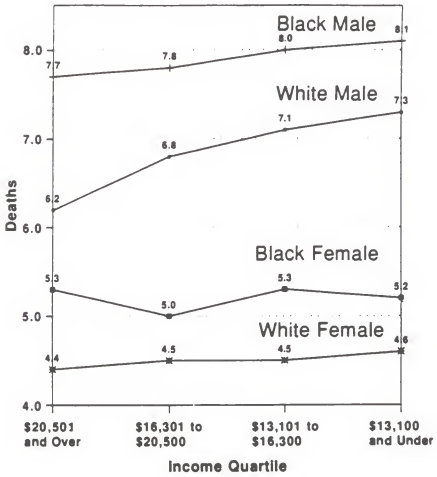
Figure 1
Percent Distribution of Medicare Aged Population
by Race and Income, 1993



SOURCE: Data derived from the 1993 Medicare Denominator File and 1990 U.S. Census of the Population.

Figure 2
Deaths per 100 Medicare Beneficiaries by Race, Sex and Income:
Persons Age 65 Years and Over , 1993



NOTE: Mortality rates are age adjusted to the total Medicare population.

SOURCE: Data derived from the 1993 Medicare Denominator File and 1990 U.S. Census of the Population.

Figure 3a
Ambulatory Visits per Person
by Race and Income:
Persons Age 65 Years and Over, 1993

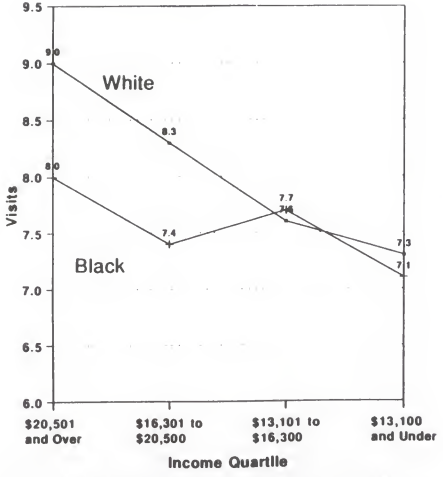
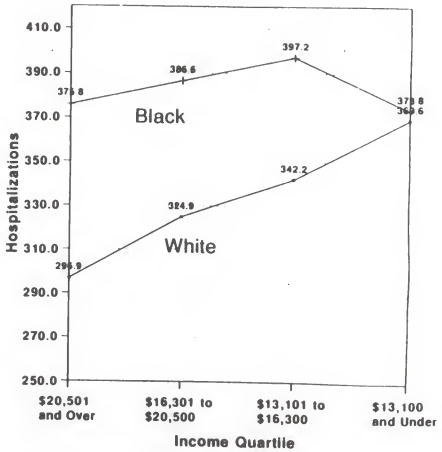


Figure 3b
Hospitalizations per 1,000 Medicare Beneficiaries
by Race and Income:
Persons Age 65 Years and Over, 1993
All Diagnoses



NOTE: Use rates are age and sex adjusted to the total Medicare population.
SOURCE: Data derived from the 1993 Medicare Denominator, National Claims History, and MEDPar Files, and 1990 U.S. Census of the Population

Figure 4a
Hospitalizations per 1,000 Medicare Beneficiaries
by Race and Income: Persons Age 65
and Over, 1993
Ischemic Heart Disease

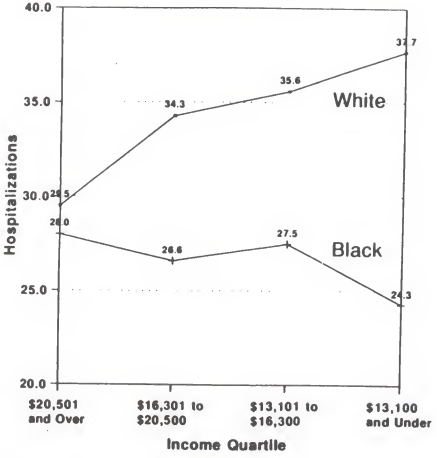
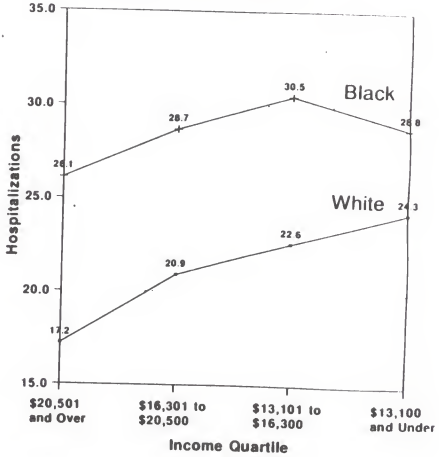


Figure 4b
Hospitalizations per 1,000 Medicare Beneficiaries
by Race and Income: Persons Age 65
and Over, 1993
Congestive Heart Failure



NOTE: Use rates are age and sex adjusted to the total Medicare population
SOURCE: Data derived from the 1993 Medicare Denominator and MEDPar Files, and 1990 U.S. Census of the Population

Figure 5a
Hospitalizations per 1,000 Medicare Beneficiaries by Race and Income: Persons Age 65 Years and Over, 1993
Percutaneous Transluminal Coronary Angioplasty

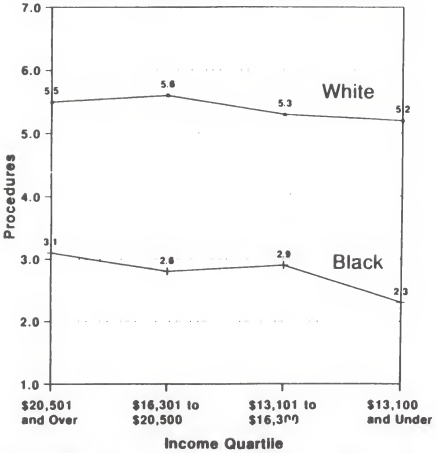
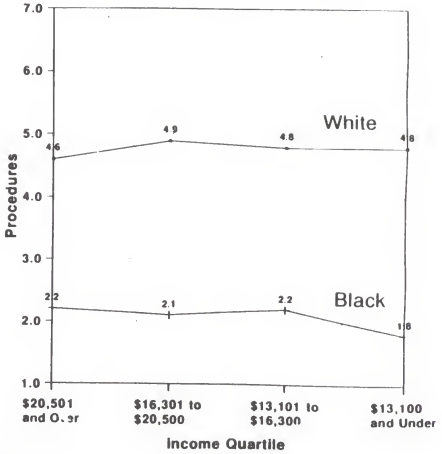
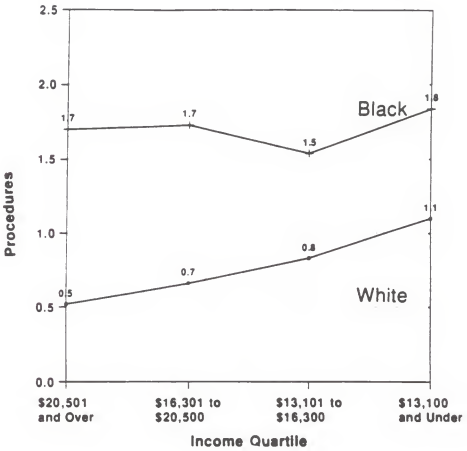


Figure 5b
Hospitalizations per 1,000 Medicare Beneficiaries by Race and Income: Persons Age 65 Years and Over, 1993
Coronary Artery Bypass Graft



NOTE: Use rates are age and sex adjusted to the total Medicare population.
SOURCE: Data derived from the 1993 Medicare Denominator and MEDPar Files, and 1990 U.S. Census of the Population

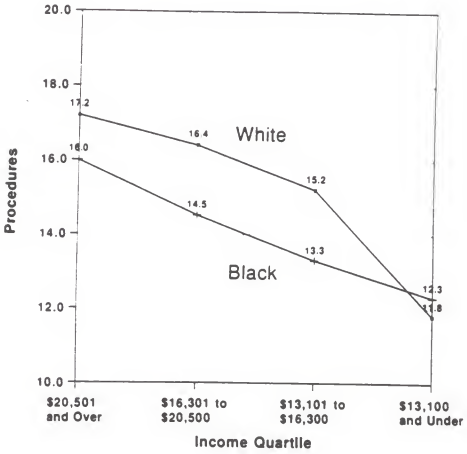
Figure 6
Hospitalizations per 1,000 Medicare Beneficiaries
by Race and Income: Persons Age 65 and Over, 1993
Bilateral Orchiectomy



NOTE: Use rates are age and sex adjusted to the total Medicare population.

SOURCE: Data derived from the 1993 Medicare Denominator and MEDPar Files, and 1990 U.S. Census of the Population.

Figure 7
Services per 1,000 Medicare Beneficiaries
by Race and Income: Persons Age 65 and Over, 1993
Electronic Portal Imaging



NOTE: Use rates are age and sex adjusted to the total Medicare population.

SOURCE: Data derived from the 1993 Medicare Denominator and National Claims History Files, and 1990 U S. Census of the Population.

Table A

Effect of Income Standardization on Black/White Differential for Mortality by Sex and for Hospitalization and for Selected Procedures, Medicare Beneficiaries Age 65 Years and Over, 1993

	Black/White Ratio	
	Age/Sex* Adjusted	Age/Sex* and Income Adjusted
Mortality		
Male	1.18	1.16
Female	1.16	1.16
Ambulatory physician visits	0.89	0.93
Magnetic Resonance Imaging	0.81	0.95
Standard Imaging Breast Procedures	0.66	0.75
Hospital discharge rates		
All diagnoses	1.14	1.15
Ischemic heart disease	0.74	0.78
Congestive heart failure	1.37	1.34
Procedures (in hospital)		
Percutaneous transluminal cardiac angioplasty	0.46	0.51
Coronary artery bypass graft	0.40	0.43
Cholecystectomy	0.69	0.63
Bilateral orchiectomy	2.45	2.32
Electronic Portal Imaging	0.83	0.92

*Mortality, mammography, partial mastectomy and bilateral orchiectomy were age adjusted only.

SOURCE: Data derived from the Medicare 1993 National Claims History File, the 1993 Medicare Denominator File, and the 1990 Census of the Population.

Table 1

Medicare Beneficiaries Age 65 and Over,

by Age, Sex, Race and Income Level of ZIP Code of Residence, 1993

Income Level	Age Group			Total	Percent
	65 to 74	75 to 84	85 +	Age 65 and Over	Distribution
White Beneficiaries					
			Male		
Total White Male	5,896,683	3,149,702	754,544	9,800,929	100.0%
$20,501 and over	1,578,019	825,030	194,047	2,597,096	27.7%
$16,301 to $20,500	1,524,441	817,307	191,842	2,533,590	27.0%
$13,101 to $16,300	1,449,852	790,643	191,056	2,431,551	25.9%
$13,100 and under	1,082,443	585,258	145,595	1,813,296	19.3%
Unknown	261,928	131,464	32,004	425,396	---
			Female		
Total White Female	7,490,539	5,211,814	2,094,595	14,796,948	100.0%
$20,501 and over	1,993,157	1,325,578	560,475	3,879,210	27.2%
$16,301 to $20,500	1,974,229	1,371,488	540,153	3,885,870	27.3%
$13,101 to $16,300	1,871,946	1,339,772	528,857	3,740,575	26.2%
$13,100 and under	1,364,388	996,091	390,591	2,751,070	19.3%
Unknown	286,819	178,885	74,519	540,223	---
Black Beneficiaries					
			Male		
Total Black Male	489,331	235,131	63,142	787,604	100.0%
$20,501 and over	31,198	12,398	2,919	46,515	6.3%
$16,301 to $20,500	36,733	14,628	3,226	54,587	7.4%
$13,101 to $16,300	65,049	28,012	6,434	99,495	13.6%
$13,100 and under	322,683	163,999	45,946	532,628	72.6%
Unknown	33,668	16,094	4,617	54,379	---
			Female		
Total Black Female	705,202	444,256	175,706	1,325,164	100.0%
$20,501 and over	42,923	23,886	9,048	75,857	6.1%
$16,301 to $20,500	51,721	27,918	9,850	89,489	7.1%
$13,101 to $16,300	92,563	52,412	18,892	163,867	13.1%
$13,100 and under	479,375	316,097	127,503	922,975	73.7%
Unknown	38,620	23,943	10,413	72,976	---

SOURCES: Data derived from the 1993 Medicare Denominator File and the 1990 Census of the Population.

Counts are of Part B Person Years, excluding HMO enrollment

Table 2

Mortality Rate Deaths per 100 Medicare Beneficiaries Age 65 Years and Over, by Race, Sex, and Income 1993

Income Level	Age Group 65 to 74	75 to 84	85 +	Crude Total	Age Adjusted Total	Relative Mortality Adj Total
Male Beneficiaries						
			White men			
Total	3.5	8.1	19.0	6.1	6.7	
$20,501 and over	2.9	7.3	18.9	5.4	6.2	1.00
$16,301 to $20,500	3.5	8.1	19.2	6.1	6.8	1.10
$13,101 to $16,300	3.8	8.5	19.3	6.5	7.1	1.14
$13,100 and under	4.0	8.9	19.1	6.8	7.3	1.19
Income Adjusted					6.8	
			Black men			
Total	5.1	9.8	16.9	7.5	8.0	
$20,501 and over	4.4	9.9	17.6	6.6	7.7	1.00
$16,301 to $20,500	4.6	9.5	18.1	6.6	7.8	1.01
$13,101 to $16,300	5.0	9.6	18.2	7.1	8.0	1.04
$13,100 and under	5.3	9.9	16.7	7.8	8.1	1.06
Income Adjusted					7.9	
Black/White Ratio						
Total					1.18	
Income Adjusted					1.16	
Female Beneficiaries						
			White women			
Total	2.1	5.1	14.8	4.9	4.5	
$20,501 and over	1.8	5.0	15.3	4.8	4.4	1.00
$16,301 to $20,500	2.1	5.1	14.9	4.9	4.5	1.03
$13,101 to $16,300	2.1	5.1	14.7	5.0	4.5	1.04
$13,100 and under	2.2	5.2	14.5	5.1	4.6	1.05
Income Adjusted					4.5	
			Black women			
Total	3.1	6.3	12.9	5.5	5.2	
$20,501 and over	2.7	6.7	14.7	5.3	5.3	1.00
$16,301 to $20,500	2.8	5.9	13.6	4.9	5.0	0.94
$13,101 to $16,300	3.0	6.3	14.1	5.3	5.3	1.00
$13,100 and under	3.1	6.2	12.5	5.5	5.2	0.97
Income Adjusted					5.2	
Black/White Ratio						
Total					1.16	
Income Adjusted					1.16	

SOURCE: Data derived from the 1993 Medicare Denominator File and the 1990 Census of the Population. Rates are based on Part A Person Years, excluding HMO enrollment

Table 3

Use of Selected Services Covered Under the Medicare Fee Schedule for White and Black Beneficiaries Age 65 Years and Over, by Income of ZIP Code of Residence, 1993

Race and Income	Ambulatory Physician Visits*		Emergency Room Physician Visits		Cataract Removal/ Lens Insertion		Computerized Axial Tomography Scans		Magnetic Resonance Imaging Procedures		Standard Imaging Breast Procedure**	
	AR	RR	AR	RR	AR	RR	AR	RR	AR	RR	AR	RR
All Beneficiaries:												
Total	8.0		36.0		4.6		22.2		4.2		25.0	
$20,501 and over	8.9	1.00	29.7	1.00	4.5	1.00	22.2	1.00	5.4	1.00	30.2	1.00
$16,301 to $20,500	8.2	0.92	34.9	1.18	4.6	1.02	22.8	1.03	4.4	0.81	26.7	0.88
$13,101 to $16,300	7.6	0.85	37.6	1.27	4.6	1.02	22.2	1.00	3.8	0.70	23.8	0.79
$13,100 and under	7.3	0.82	41.3	1.39	4.7	1.04	22.2	1.00	3.4	0.63	20.0	0.66
White Beneficiaries:												
Total	8.1		35.0		4.7		22.1		4.3		26.0	
$20,501 and over	9.0	1.00	29.6	1.00	4.5	1.00	22.3	1.00	5.5	1.00	31.0	1.00
$16,301 to $20,500	8.3	0.92	34.6	1.17	4.7	1.03	22.9	1.02	4.4	0.81	27.2	0.88
$13,101 to $16,300	7.6	0.85	36.8	1.24	4.7	1.04	21.9	0.98	3.8	0.69	24.1	0.78
$13,100 and under	7.3	0.82	39.9	1.35	4.8	1.07	21.7	0.97	3.4	0.62	20.8	0.67
Income Adjusted	8.1		35.4		4.7		22.2		4.3		25.7	
Black Beneficiaries:												
Total	7.2		50.6		3.8		25.0		3.5		17.1	
$20,501 and over	8.0	1.00	44.2	1.00	3.4	1.00	27.5	1.00	4.5	1.00	20.4	1.00
$16,301 to $20,500	7.4	0.92	45.8	1.04	3.5	1.03	26.4	0.96	4.3	0.94	19.9	0.98
$13,101 to $16,300	7.7	0.97	52.2	1.18	3.7	1.09	28.1	1.02	4.3	0.95	21.1	1.03
$13,100 and under	7.1	0.88	51.6	1.17	3.9	1.16	24.6	0.89	3.3	0.72	16.0	0.79
Income Adjusted	7.6		48.6		3.6		26.5		4.1		19.2	
Black/White Ratio:												
Total		0.89		1.45		0.81		1.13		0.81		0.66
Income Adjusted		0.93		1.37		0.77		1.19		0.95		0.75

Key: AR = rate per 100 beneficiaries, except for the Ambulatory Visits rates, adjusted for age and sex; RR = income quartile and Black/White Ratios

* = Ambulatory visit rates are calculated on a per person basis

** = Breast procedures are calculated for females only

SOURCES: Data derived from the 1993 National Claims History, the 1993 Medicare Denominator File, and the 1990 Census of the Population

Table 4

Hospitalization Age and Sex Adjusted Rates and Risk Ratios for All Diagnoses Combined and for Heart and Vascular-Related Diagnoses, for Medicare Beneficiaries Age 65 Years and Over, by Race and Income, 1993

	All Hospitalizations		Heart Disease		Ischemic Heart Disease		Acute Myocardial Infarction		Congestive Heart Failure		Hypertension	
	AR	RR	AR	RR	AR	RR	AR	RR	AR	RR	AR	RR
All Beneficiaries:												
Total	332.84		72.58		33.15		11 67		21 53		0 83	
$20,501 and over	298.39	1.00	63.74	1.00	29.50	1.00	10 22	1 00	17.40	1 00	0 54	1 00
$16,301 to $20,500	326.20	1 09	72.92	1.14	34.13	1 16	11 77	1 15	21.10	1 21	0 69	1 28
$13,101 to $16,300	344.45	1.15	76.27	1.20	35.27	1.20	12 63	1 24	22 92	1 32	0 86	1 59
$13,100 and under	370.70	1.24	79.37	1.25	34.51	1 17	12.42	1.22	25 42	1 46	1 28	2 37
White Beneficiaries:												
Total White	329 12		72.34		33.82		11 93		20 91		0 75	
$20,501 and over	296.93	1.00	63.51	1.00	29.51	1 00	10.23	1.00	17 24	1.00	0 52	1 00
$16,301 to $20,500	324 86	1.09	72.81	1.15	34.30	1.16	11 84	1.16	20.91	1.21	0 66	1 27
$13,101 to $16,300	342.20	1.15	76 08	1.20	35.59	1.21	12.79	1.25	22.58	1.31	0 83	1 60
$13,100 and under	369.60	1.24	80.88	1.27	37.71	1.28	13.62	1.33	24 30	1.41	1 10	2 12
Income Adjusted	333.40		73.32		34.28		12.12		21.26		0 78	
Black Beneficiaries:												
Total Black	375.56		74.80		25.04		8 57		28.62		1 76	
$20,501 and over	375.80	1.00	75.01	1.00	27.95	1.00	9.20	1.00	26 06	1.00	1 70	1 00
$16,301 to $20,500	386.56	1.03	77.28	1.03	26.57	0.95	8.22	0.89	28.71	1.10	1 73	1 02
$13,101 to $16,300	397.20	1.06	80.32	1.07	27.50	0.98	8 81	0.96	30.53	1 17	1 54	0 91
$13,100 and under	373.80	0.99	74.26	0.99	24.29	0.87	8.56	0.93	28 82	1 11	1 82	1 07
Income Adjusted	383.34		76.72		26.58		8.70		28.53		1 70	
Black/White Ratio:												
Total	1.14		1.03		0.74		0.72		1.37		2 35	
Income Adjusted	1.15		1 05		0.78		0 72		1 34		2 18	

Key: AR = rate per 1,000 beneficiaries, adjusted for age and sex; RR = income quartile and Black/White risk ratios.

Sources: Data derived from the 1993 Medicare Provider Analysis and Review File, 1993 Medicare Denominator File

Table 5

Hospitalization Rates and Risk Ratios for Heart and Vascular Procedures,
for Medicare Beneficiaries Age 65 Years and Over, by Race and Income, 1993

Race and Income	Cardiac Catheterization		Percutaneous Transluminal Coronary Angioplasty		Coronary Artery Bypass Graft		Carotid Endarterectomy	
	AR	RR	AR	RR	AR	RR	AR	RR
All Beneficiaries:								
Total	16.04		5.17		4.54		2.26	
$20,501 and over	15.72	1.00	5.47	1.00	4.53	1.00	2.15	1.00
$16,301 to $20,500	16.72	1.06	5.56	1.02	4.84	1.07	2.47	1.15
$13,101 to $16,300	16.24	1.03	5.21	0.95	4.73	1.04	2.39	1.11
$13,100 and under	15.80	1.01	4.50	0.82	4.13	0.91	2.05	0.95
White Beneficiaries:								
Total White	16.41		5.40		4.76		2.39	
$20,501 and over	15.78	1.00	5.52	1.00	4.57	1.00	2.17	1.00
$16,301 to $20,500	16.84	1.07	5.62	1.02	4.90	1.07	2.51	1.16
$13,101 to $16,300	16.42	1.04	5.31	0.96	4.84	1.06	2.47	1.14
$13,100 and under	17.14	1.09	5.19	0.94	4.84	1.06	2.46	1.13
Income Adjusted	16.55		5.41		4.79		2.40	
Black Beneficiaries:								
Total Black	11.54		2.48		1.91		0.74	
$20,501 and over	12.26	1.00	3.05	1.00	2.18	1.00	0.76	1.00
$16,301 to $20,500	11.74	0.96	2.84	0.93	2.12	0.97	0.74	0.97
$13,101 to $16,300	12.13	0.99	2.89	0.95	2.16	0.99	0.67	0.88
$13,100 and under	11.45	0.93	2.32	0.76	1.84	0.84	0.74	0.97
Income Adjusted	11.90		2.78		2.08		0.73	
Black/White Ratio:								
Total		0.70		0.46		0.40		0.31
Income Adjusted		0.72		0.51		0.43		0.30

Key: AR = rate per 1,000 beneficiaries, adjusted for age and sex, RR = income quartile and Black/White risk ratios.

SOURCES: Data derived from the 1993 Medicare Provider Analysis and Review File, the 1993 Medicare Denominator File, and the 1990 Census of the Population

Table 6

Hospitalization Adjusted Rates and Risk Ratios for Selected Surgical Procedures, for Medicare Beneficiaries 65 Years of Age and Over, by Race and Income: 1993

Race and Income	Prostatectomy		Cholecystectomy		Repair of Inguinal Hernia		Simple/Radical Mastectomy		Hysterectomy		Appendectomy	
	AR	RR	AR	RR	AR	RR	AR	RR	AR	RR	AR	RR
All Beneficiaries:												
Total	17.52		5.34		1.39		2.77		3.44		0.46	
$20,501 and over	17.13	1.00	4.68	1.00	1.36	1.00	2.79	1.00	3.58	1.00	0.48	1.00
$16,301 to $20,500	17.60	1.03	5.37	1.15	1.36	1.00	2.82	1.01	3.50	0.98	0.46	0.96
$13,101 to $16,300	17.90	1.04	5.72	1.22	1.41	1.04	2.85	1.02	3.47	0.97	0.46	0.96
$13,100 and under	17.83	1.04	5.70	1.22	1.46	1.07	2.66	0.95	3.23	0.90	0.44	0.92
White Beneficiaries:												
Total White	17.49		5.47		1.40		2.81		3.54		0.47	
$20,501 and over	17.07	1.00	4.70	1.00	1.36	1.00	2.80	1.00	3.60	1.00	0.49	1.00
$16,301 to $20,500	17.57	1.03	5.42	1.15	1.36	1.00	2.83	1.01	3.53	0.98	0.46	0.94
$13,101 to $16,300	17.80	1.04	5.82	1.24	1.42	1.04	2.87	1.03	3.52	0.98	0.46	0.94
$13,100 and under	17.95	1.05	6.25	1.33	1.53	1.13	2.76	0.99	3.52	0.98	0.45	0.92
Income Adjusted	17.60		5.55		1.42		2.82		3.54		0.47	
Black Beneficiaries:												
Total Black	17.94		3.80		1.23		2.33		2.32		0.37	
$20,501 and over	20.42	1.00	3.47	1.00	1.30	1.00	2.24	1.00	2.27	1.00	0.35	1.00
$16,301 to $20,500	19.09	0.93	3.15	0.91	1.22	0.94	2.43	1.08	2.11	0.93	0.28	0.80
$13,101 to $16,300	20.30	0.99	3.44	0.99	1.23	0.95	2.27	1.01	2.21	0.97	0.38	1.09
$13,100 and under	17.44	0.85	3.95	1.14	1.25	0.96	2.36	1.05	2.37	1.04	0.38	1.09
Income Adjusted	19.31		3.50		1.25		2.33		2.24		0.35	
Black/White Ratio:												
Total		1.03		0.69		0.88		0.83		0.66		0.79
Income Adjusted		1.10		0.63		0.88		0.83		0.63		0.75

Key: AR = rate per 1,000 beneficiaries, adjusted for age and sex; RR = income quartile and Black/White risk ratios

NOTE: Hospitalization rates for cholecystectomy and repair of inguinal hernia do not include procedures performed on an outpatient basis

SOURCES: Data derived from the 1993 Medicare Provider Analysis Review File, the 1993 Denominator File, and the 1990 Census of the Population

Table 7

Hospitalization Adjusted Rates and Risk Ratios for Surgical Procedures for Which the Rates Are Higher for Black Persons Than for White Persons, and for Medicare Beneficiaries 65 Years of Age and Over, by Race and Income: 1993

Race and Income	Excisional Debridement		Arteriovenostomy		Bilateral Orchiectomy	
	AR	RR	AR	RR	AR	RR
All Beneficiaries:						
Total	3.09		1.13		0.92	
$20,501 and over	2.61	1.00	0.92	1.00	0.72	1.00
$16,301 to $20,500	2.92	1.12	0.95	1.03	0.82	1.14
$13,101 to $16,300	3.02	1.16	1.01	1.10	0.94	1.31
$13,100 and under	3.90	1.49	1.70	1.85	1.25	1.74
White Beneficiaries:						
Total White	2.74		0.84		0.83	
$20,501 and over	2.53	1.00	0.85	1.00	0.70	1.00
$16,301 to $20,500	2.80	1.11	0.87	1.02	0.80	1.14
$13,101 to $16,300	2.82	1.11	0.84	0.99	0.90	1.29
$13,100 and under	2.89	1.14	0.81	0.95	1.00	1.43
Income Adjusted	2.76		0.84		0.85	
Black Beneficiaries:						
Total Black	7.21		4.47		2.03	
$20,501 and over	7.32	1.00	4.45	1.00	2.15	1.00
$16,301 to $20,500	8.50	1.16	4.32	0.97	1.87	0.87
$13,101 to $16,300	7.94	1.08	4.92	1.11	1.78	0.83
$13,100 and under	7.04	0.96	4.47	1.00	2.08	0.97
Income Adjusted	7.70		4.54		1.97	
Black/White Ratio:						
Total		2.63		5.32		2.45
Income Adjusted		2.79		5.39		2.32

Key: AR = rate per 1,000 beneficiaries, adjusted for age and sex; RR = income quartile and Black/White risk ratios.

SOURCES: Data derived from the 1993 Medicare Provider Analysis and Review File and the 1993 Medicare Denominator File, and the 1990 Census of the Population

Table 8

Selected Changing Procedures per 1,000 Medicare Beneficiaries Age 65 Years and Over, by ZIP Code Median Income, 1993

Race and Income	Absorptiometry		Computerized Treatment Planning		EEG Monitoring		Electronic Portal Imaging		Electro-therapy for Chronic Pain		Evoked Potential Monitoring		Signal Averaging ECG	
	AR	RR	AR	RR	AR	RR	AR	RR	AR	RR	AR	RR	AR	RR
All Beneficiaries:	0.9		11.4		0.9		15.2		3.7		3.1		1.1	
$20,501 and over	1.4	1.00	12.4	1.00	0.8	1.00	17.2	1.00	2.3	1.00	3.5	1.00	1.4	1.00
$16,301 to $20,500	0.8	0.58	11.7	0.94	0.9	1.03	16.4	0.95	2.8	1.20	3.5	0.99	1.2	0.87
$13,101 to $16,300	0.7	0.49	11.1	0.89	1.0	1.15	15.1	0.88	2.4	1.04	2.7	0.78	1.0	0.74
$13,100 and under	0.8	0.58	10.4	0.83	1.1	1.27	11.9	0.69	7.7	3.39	2.7	0.78	0.9	0.70
White Beneficiaries:														
Total	0.9		11.4		0.9		15.4		3.6		3.2		1.1	
$20,501 and over	1.4	1.00	12.4	1.00	0.8	1.00	17.2	1.00	2.3	1.00	3.5	1.00	1.4	1.00
$16,301 to $20,500	0.8	0.58	11.6	0.94	0.9	1.02	16.4	0.95	2.8	1.22	3.5	1.00	1.2	0.87
$13,101 to $16,300	0.7	0.47	11.1	0.89	1.0	1.15	15.2	0.88	2.3	1.03	2.7	0.77	1.0	0.72
$13,100 and under	0.6	0.42	10.1	0.81	1.1	1.35	11.8	0.69	8.3	3.65	2.9	0.83	0.8	0.62
Income Adjusted	0.9		11.4		0.9		15.1		3.9		3.2		1.1	
Black Beneficiaries:														
Total	1.4		11.7		0.8		12.8		5.0		2.4		1.3	
$20,501 and over	1.3	1.00	12.6	1.00	0.8	1.00	16.0	1.00	2.4	1.00	3.6	1.00	1.5	1.00
$16,301 to $20,500	0.7	0.49	13.9	1.10	1.0	1.19	14.5	0.91	1.2	0.52	2.4	0.67	1.3	0.89
$13,101 to $16,300	1.3	0.98	12.9	1.03	0.8	0.98	13.3	0.84	3.4	1.44	3.3	0.90	1.8	1.20
$13,100 and under	1.5	1.14	11.2	0.89	0.8	1.01	12.3	0.77	6.0	2.54	2.1	0.58	1.3	0.86
Income Adjusted	1.2		12.6		0.8		13.8		3.1		2.9		1.5	
Black/White Ratios:														
Total		1.59		1.03		0.90		0.83		1.38		0.74		1.21
Income Adjusted		1.37		1.11		0.87		0.92		0.80		0.90		1.36

Key: AR = Adjusted for age and sex; RR = Quartile and black:white risk ratios

SOURCES: Data derived from the 1993 Medicare Part B Physician/Supplier File, the 1993 Medicare Denominator File, and the 1990 Census of the Population

Table 9
Medicare Part B Fee-for-Service Claims: Allowed Charges by Type of Service, 1991, 1992, and 1993

Year	Total	Medical Visits and Consultations	Surgery, Rad. Ther., Anesthesia, & Assistants	X-ray and Lab Tests	All Other
			Allowed Charges (in millions)		
1993	$46,124	$16,311	$12,984	$8,962	$7,868
1992	43,942	14,926	13,301	8,785	6,930
1991	42,915	13,885	14,116	8,727	6,186
			Percent Changes		
1992-93	5.0	9.3	-2.4	2.0	13.5
1991-92	2.4	7.5	-5.8	0.7	12.0
			Adjusted for Changed Population		
1992-93	3.5	7.8	-3.8	0.6	12.0
1991-92	0.7	5.7	-7.3	-1.0	10.2

SOURCE: Medicare Part B Monitoring System: Allowed charges derived from Medicare National Claims History File. Population information from June 30 Medicare Part B enrollment files.

Table 10
Medicare Part B Fee-for-Service Claims: Allowed Charges by Type of Service and by Physician/Supplier Specialty Category, 1991, 1992, and 1993

Specialty Category	Year	Total	Medical Visits and Consultations	Surgery, Rad. Ther., Anesthesia, Assistants	X-ray and Lab Tests	All Other
			Allowed Charges in Millions			
Total	1993	$46,124	$16,311	$12,984	$8,962	$7,868
	1992	43,942	14,926	13,301	8,785	6,930
	1991	42,915	13,885	14,116	8,727	6,186
Nonphysician	1993	10,282	258	345	2,506	7,174
	1992	9,088	153	351	2,370	6,214
	1991	8,008	230	361	2,051	5,366
Supplier	1993	6,384	166	38	167	6,012
	1992	5,668	63	20	167	5,418
	1991	5,021	42	12	193	4,774
Facility	1993	3,268	18	15	2,325	910
or lab	1992	2,886	28	51	2,192	615
	1991	2,557	137	103	1,848	469
Practitioner	1993	630	74	292	13	252
	1992	534	62	280	11	181
	1991	430	51	246	10	123
Physician	1993	35,842	16,053	12,639	6,456	694
	1992	34,854	14,773	12,951	6,415	715
	1991	34,906	13,655	13,755	6,676	820
Primary Care	1993	3,755	2,989	242	462	62
Specialties	1992	3,376	2,658	232	459	27
	1991	2,976	2,237	227	479	33
Medical	1993	13,450	8,667	1,921	2,371	489
Specialty	1992	12,616	7,879	1,982	2,233	522
	1991	12,204	7,275	2,123	2,291	515
Surgical	1993	11,515	3,043	7,794	650	37
Specialty	1992	11,491	2,835	7,978	631	47
	1991	11,981	2,620	8,651	605	105
Other Medical	1993	4,855	166	1,931	2,714	44
Specialty	1992	4,960	155	1,973	2,792	40
	1991	4,942	145	1,867	2,875	55
Clinics/	1993	1,025	525	253	219	28
Unknown 1/	1992	1,244	620	329	259	36
	1991	1,680	800	453	378	49
Chiropractors,	1993	1,242	673	495	40	34
Optometrists,	1992	1,167	625	457	42	43
and Podiatrists	1991	1,123	577	432	48	66

1/ Includes unknown physician specialties.

SOURCE: Medicare Part B Monitoring System: Allowed charges derived from Medicare National Claims History File

Table 11

Medicare Part B Fee-for-Service Claims: Allowed Charges and Percent of Total by Physician Specialty Category, 1991, 1992, 1993 and Preliminary 1994

Physician Specialty Category and Year	Allowed Charges	Percent of Total
	(In Millions)	
All Physicians		
1994 preliminary	$36,289	100.0
1993	35,842	100.0
1992	34,854	100.0
1991	34,906	100.0
Primary Care		
1994 preliminary	3,762	10.4
1993	3,755	10.5
1992	3,376	9.7
1991	2,976	8.5
Medical		
1994 preliminary	13,563	37.4
1993	13,450	37.5
1992	12,616	36.2
1991	12,204	35.0
Surgical		
1994 preliminary	11,657	32.1
1993	11,515	32.2
1992	11,491	33.0
1991	11,981	34.3
Other Physician		
1994 preliminary	4,572	12.6
1993	4,855	13.5
1992	4,960	14.2
1991	4,942	14.2
Clinics/Unknown 1/		
1994 preliminary	1,516	4.2
1993	1,025	2.9
1992	1,244	3.6
1991	1,680	4.8
Chiropractors, Optometrists and Podiatrists		
1994 preliminary	1,219	3.4
1993	1,242	3.5
1992	1,167	3.3
1991	1,123	3.2

1/ Includes unknown physician specialties.

NOTE: Preliminary 1994 data are derived from services performed in 1994 and recorded in the Medicare National Claims History File by December 31, 1994. Final totals for 1994 will be developed after June 30, 1995.

SOURCE: HCFA Part B Monitoring System: Allowed charges derived from HCFA National Claims History File.

Table 12
Medicare Part B Fee-for-Service Claims: Allowed Charges for Physician Services
by Place of Service, 1991, 1992, 1993, and Preliminary 1994

Place of Service	1991		1992		1993		Preliminary 1994	
	Amount (millions)	Percent	Amount (millions)	Percent	Amount (millions)	Percent	Amount (millions)	Percent
All	$34,906	100.0	$34,854	100.0	$35,842	100.0	$36,289	100.0
Office	13,677	39.2	13,940	40.0	15,052	42.0	15,634	43.1
Home	158	0.4	146	0.4	138	0.4	453	1.2
Hospital Inpatient	13,986	40.1	13,210	37.9	13,079	36.5	12,455	34.3
HOPD or ER	5,587	16.0	5,465	15.7	5,549	15.5	5,649	15.6
Ambulatory Surgical Center	493	1.4	669	1.9	747	2.1	797	2.2
Nursing Home	518	1.5	677	1.9	755	2.1	808	2.2
All Other	488	1.4	747	2.1	522	1.4	493	1.4

NOTES: HOPD means hospital outpatient department. ER means emergency room.

SOURCE: Data derived from the Medicare Part B Monitoring System: National Claims History File.

Table 13
Medicare Physician Services Covered by the Medicare Fee Schedule
Procedures: 1990 to 1994

Service Category	1990	1991	1992	1993	1994*	1990-91	1991-92	1992-93
	Rate per 1,000 Beneficiaries					Percent Change		
Major Procedure: General								
Breast **	4.1	4.8	4.2	4.0	3.6	18.0	-13.0	-4.4
Colectomy	4.4	4.4	4.4	4.3	3.8	0.3	-0.1	-2.8
Cholecystectomy	4.8	3.8	3.0	2.6	2.1	-21.8	-20.5	-14.5
TURP **	17.7	18.2	16.5	14.3	11.3	2.8	-9.6	-13.1
Hysterectomy **	2.6	3.3	3.4	3.2	2.9	29.0	4.4	-5.4
Disk Surgery	3.6	4.6	4.9	4.8	2.8	28.2	7.1	-2.4
Other	58.5	62.5	64.9	68.0	62.5	6.9	3.7	4.8
Major Procedure: Cardiovascular								
CABG	4.7	5.5	5.9	5.9	4.9	17.4	7.0	-0.4
Aneurysm	1.0	1.2	1.1	1.1	1.0	13.4	-7.6	1.1
Thromboendarterectomy	1.5	2.0	2.2	2.2	2.2	37.2	8.5	0.8
PTCA	3.8	5.5	6.2	6.6	5.5	45.4	13.7	6.2
Pacemaker	5.9	6.4	6.1	6.1	5.5	8.0	-3.7	0.1
Other	71.8	75.0	86.4	89.9	101.5	4.4	15.1	4.2
Major Procedure: Orthopedic								
Hip Fracture Repair	6.2	6.5	6.6	6.7	6.1	5.2	0.9	2.4
Hip Replacement	3.1	3.6	3.5	3.4	3.2	13.6	-1.8	1.8
Knee Replacement	3.3	3.8	4.1	4.3	4.2	16.3	9.0	3.3
Other	13.7	15.2	15.6	16.6	14.4	10.6	2.8	6.6

Table 13 (Continued)
Medicare Physician Services Covered by the Medicare Fee Schedule
Procedures: 1990 to 1994

Service Category	1990	1991	1992	1993	1994*	1990-91	1991-92	1992-93
	Rate per 1,000 Beneficiaries					Percent Change		
Major Procedure: Eye								
Corneal Transplant	0.7	0.8	0.7	0.7	0.6	19.8	-14.0	-4.3
Cat Rem/Lens Insert	36.1	46.7	45.8	42.1	41.8	29.3	-2.0	8.2
Retinal Detachment	1.9	2.0	1.9	1.9	1.7	7.1	-6.3	1.5
Treatm Retinal Lesions	7.4	9.0	8.2	8.6	8.4	20.4	-8.1	4.3
Other	35.7	45.7	42.2	42.5	40.6	28.0	-7.7	0.8
Ambulatory Procedures:								
Skin	112	130	110	105	95	15.6	-15.2	4.7
Musculoskeletal	22	25	22	22	20	17.8	-14.1	0.9
Hernia Repair	5	6	6	6	4	14.1	-3.0	0.4
Lithotripsy	1	1	1	1	1	-8.1	1.8	6.0
Other	74	86	86	90	80	15.6	0.4	4.0
Minor Procedures:								
Skin	687	775	867	885	472	12.8	11.9	2.0
Musculoskeletal	142	158	147	154	149	11.4	-6.9	4.6
Other	536	661	669	690	690	23.4	1.2	3.2
Oncology								
Radiation Therapy	136	185	269	265	235	36.0	45.7	-1.7
Other	85	98	99	117	122	15.6	0.5	18.5

Table 13 (Continued)
Medicare Physician Services Covered by the Medicare Fee Schedule
Procedures: 1990 to 1994

Service Category	1990	1991	1992	1993	1994*	1990-91	1991-92	1992-93
	Rate per 1,000 Beneficiaries					Percent Change		
Endoscopy								
Arthroscopy	2.7	3.5	3.8	4.1	4.1	28.6	8.6	7.9
Upper GI Endoscopy	37.7	44.4	45.5	46.8	45.6	17.7	2.6	2.8
Sigmoidoscopy	42.9	43.5	39.2	35.7	31.1	1.5	-10.0	8.9
Colonoscopy	32.6	40.0	42.1	43.8	42.5	22.5	5.3	4.0
Cystoscopy	39.3	43.7	42.8	43.2	40.3	11.4	-2.1	0.9
Broncoscopy	8.7	9.8	9.5	9.3	8.3	12.8	-3.9	-2.1
Laparoscopic Cholecystectomy	0.1	2.9	3.9	4.1	3.9	2091.3	35.4	4.5
Laryngoscopy	8.1	9.2	9.4	9.6	9.5	12.4	2.4	2.7
Other	12.9	15.2	15.8	16.4	16.6	17.6	3.9	4.0
Dialysis	32	37	41	43	39	14.6	11.7	3.6
Tests								
Other	90	84	130	143	130	-6.7	54.5	9.7
Electrocardiograms	1,022	1,093	365	377	927	7.0	-66.6	3.4
Cardiov Stress Tests	43	51	56	60	71	19.5	10.7	6.1
EKG Monitoring	45	48	54	49	42	5.3	12.0	-9.0
Anesthesia	6,133	16,003	265	266	250	161.0	-98.3	0.5

* = Data for 1994 are incomplete.

** Breast and hysterectomy rates are based on female enrollment. TURP rates are based on male enrollment.

NOTE: TURP means transluminal resection of prostate, CABG means coronary artery bypass graft, PTCA means percutaneous transluminal cardiac angioplasty.

SOURCES: 5 percent BMAD for 1990 and 1991; 1992 and later - Medicare Part B Monitoring System. Medicare Denominator files: 1990 to 1994.

Table 14

Visits and Consultations by Vulnerable Population Groups: 1991-92

Vulnerable Population	Outpatient Visits		E.R. Visits		Nursing Home Visits		Consultations	
	1991	1992	1991	1992	1991	1992	1991	1992
	Age-Sex Adjusted Visits per Beneficiary							
Shortage Areas								
All Shortage Combined	4.72 a	4.78 ab	0.38 a	0.34 ab	0.30	0.33 a	0.41 a	0.56 b
Urban	4.91 a	4.96 ab	0.42 a	0.38 ab	0.34 a	0.37 ab	0.49 a	0.67 ab
Rural	4.43 a	4.49 ab	0.32 a	0.28 ab	0.25 a	0.25 a	0.28 a	0.40 ab
Non-Shortage	5.12	5.23 b	0.31	0.30 b	0.31	0.34 b	0.40	0.56 b
Poor Areas								
All Poor Combined	5.07 a	5.11 ab	0.41 a	0.37 ab	0.38 a	0.42 ab	0.48 a	0.67 ab
Urban	5.12	5.17 ab	0.42 a	0.37 ab	0.41 a	0.46 ab	0.54 a	0.74 ab
Rural	4.89 a	4.89 a	0.37 a	0.36 ab	0.26 a	0.20 ab	0.27 a	0.40 ab
Non Poor	5.10	5.21 b	0.31	0.30 b	0.31	0.33 b	0.40	0.55 b
Race								
Black	4.67 a	4.75 ab	0.47 a	0.45 ab	0.37 a	0.42 ab	0.45 a	0.63 ab
White	5.21	5.30 b	0.31	0.29 b	0.32	0.34 b	0.41	0.56 b
Medicaid Eligible								
Yes	5.71 a	5.67 a	0.69 a	0.68 ab	1.51 a	1.58 ab	0.59 a	0.82 ab
No	5.03	5.15 b	0.28	0.26 b	0.18	0.20 b	0.38	0.53 b
Disabled								
Yes	5.43 a	5.52 ab	0.57 a	0.56 ab	0.55 a	0.62 ab	0.56 a	0.79 ab
No	5.06	5.17 b	0.29	0.28 b	0.29	0.31 b	0.39	0.54 b
Age								
85 years and over	4.26 a	4.36 ab	0.53 a	0.53 a	2.26 a	2.43 ab	0.51 a	0.72 ab
Less than 85 years	5.12	5.23 b	0.31	0.30 b	0.26	0.28 b	0.40	0.56 b
Area of Residence								
Rural	4.72 a	4.81 ab	0.32	0.31 ab	0.28 a	0.30 ab	0.29 a	0.41 ab
Urban	5.25	5.36 b	0.32	0.30 b	0.32	0.35 b	0.45	0.62 b
All Beneficiaries	5.10	5.20 b	0.32	0.30 b	0.31	0.34 b	0.40	0.56 b

a/ Significantly different from the comparison group at the 0.05 level.

b/ Significantly different from 1991 to 1992 at the 0.05 level.

SOURCE: Data derived from Medicare Part B claims for a sample of beneficiaries, Medicare Denominator Files.

Table 15

Percent of Persons With A Physician Visit and Mean Number of Visits per Person, by Selected Sociodemographic Characteristics: 1984, 1986, 1989, 1990, 1991, and 1992.

Sociodemographic characteristics	Percent distribution of persons	Percent with a physician visit						Mean number of visits per person					
	1992	1984	1986	1989	1990	1991	1992	1984	1986	1989	1990	1991	1992
Health Insurance status													
65 years and over (1)	100.0	82	83	85	86	86	87	8.2	9.1	8.9	9.2	10.4	10.6
Medicare only	14.6	76	73	79	78	79	81	7.6	8.3	7.5	8.1	8.7	9.5
Medicare and other public program	7.3	89	86	90	88	89	90	11.9	14.0	13.1	14.1	17.1	17.6
Medicare and other coverage	69.1	84	85	87	87	87	89	8.3	8.9	8.8	8.9	10.2	10.3
18-64 years (2)	100.0	70	71	72	73	73	72	4.9	5.2	5.2	5.4	5.4	5.7
Public program	7.0	84	83	85	85	83	85	10.1	11.9	11.1	11.1	11.2	13.7
Insured but not public program	69.9	72	73	75	75	75	76	4.7	5.0	5.1	5.2	5.2	5.5
Uninsured	18.2	57	57	57	60	60	57	3.7	3.6	3.2	4.0	3.7	3.6
Income Level													
65 years and over	100.0	82	83	85	86	86	87	8.2	9.1	8.9	9.2	10.4	10.6
Poor/Low income	44.1	81	81	84	84	84	85	8.4	9.3	9.1	9.7	10.9	11.1
Not poor	55.9	82	84	86	87	87	88	8.1	8.9	8.7	8.8	10.1	10.2
18-64 years	100.0	70	71	72	73	73	72	4.9	5.2	5.2	5.4	5.4	5.7
Poor/Low income	31.8	67	68	69	70	70	68	5.1	5.7	5.4	5.9	5.7	6.3
Not poor	68.2	72	72	73	74	74	74	4.8	5.0	5.1	5.2	5.2	5.5

(1) Includes persons with insurance other than Medicare and unknown insurance.

(2) Includes persons with unknown insurance.

SOURCE: Data derived from the National Health Interview Survey, National Center for Health Statistics, 1984-92.

TABLE 16

Utilization Access and Satisfaction Indicators by Age 1991-93

	Disabled Under Age 65			Elderly Age 65 and Over		
	1991	1992	1993	1991	1992	1993
Type of Regular Source						
Physician's office	57.0% *	58.4% *	60.6% *	67.5%	69.9% (b)	72.4% (c) (a)
Other place with regular physician	24.4%	19.9%	19.3%	19.4%	16.9%	16.0% (a)
Other place with no regular physician	9.6%	9.3% *	8.7% *	4.0%	3.6%	3.5%
None	9.1%	12.4%	11.3%	9.2%	9.6%	8.1%
Physician Use						
Percent with:						
Physician visit (any setting)	85.9%	89.1% (b)	88.2% *	86.1%	90.1% (b)	91.4% (c) (a)
Physician visit in non-hospital setting	81.0% *	82.0% *	81.9% *	83.5%	87.2% (b)	88.8% (c) (a)
Outpatient department visit	32.7% *	40.8% (b) *	36.5% (c (a)	25.9%	36.8% (b)	35.9% (a)
Emergency room visit	27.8% *	33.1% (b) *	28.6% (c *	16.1%	19.8% (b)	20.3% (a)
Average Number of Visits per User						
Total	6.2	6.8	6.5	6.1	6.6 (b)	6.6 (a)
To primary care physician	4.7	4.6	4.6	4.6	4.7	4.7
To medical specialist	3.5 *	4.1 *	4.0	3.0	3.2	3.5 (a)
To other specialist	3.7 *	3.9 *	3.5 *	3.1	3.1	3.1
To non-physician	2.2	2.2	2.3	2.1	2.1	2.0
Hospital Use						
Percent with hospitalization	16.9% *	16.5% *	17.1%	13.4%	13.8%	16.4% (c) (a)
Percent with ACS condition	3.9% *	4.2% *	4.7%	2.8%	3.0%	5.6% (c) (a)
Barriers to Care						
Percent reporting a health problem and not receiving care	22.6% *	19.9% *	17.1% (a) *	8.2%	7.0% (b)	6.3% (a)
Of those, percent reporting a financial barrier	67.7% *	66.5% *	71.4% *	48.7%	53.4%	44.2% (c)
Satisfaction with Care						
Percent satisfied with:						
Quality of medical care	88.9% *	92.2% (b) *	92.6% (a) *	95.2%	96.4% (b)	96.3% (a)
Availability of medical care	82.3% *	88.6% (b) *	88.5% (a) *	89.1%	93.4% (b)	94.8% (c) (a)
Ease of getting to doctor	84.1% *	88.7% (b) *	89.5% (a) *	93.7%	94.4%	94.6% (a)
Costs of medical care	61.6% *	69.9% (b) *	73.8% (c (a) *	72.0%	80.8% (b)	83.8% (c) (a)

(*) Significantly different from those aged 65 and over ($p<0.05$).
(a) Significantly different between 1991 and 1993.
(b) Significantly different between 1991 and 1992.
(c) Significantly different between 1992 and 1993.

NOTE: Age-adjusted using the direct method of standardization.

SOURCE: Data derived from Medicare Current Beneficiary Survey, Rounds 1,4 and 7 Data; Medicare NCH Claims for MCBS Population.

Table 17

Covered Preventive Service Use for Vulnerable Population Groups: 1991-92

Vulnerable Population	Mammography		Pneumococcal Pneumonia Immunization	
	1991	1992	1991	1992
	(Age-Sex Adjusted Tests per 1,000 Beneficiaries)			
Shortage Areas				
All Shortage Combined	240.1 a	245.5 ab	54.3 a	42.4 b
Urban	231.2 a	235.7 a	61.1 a	46.6
Rural	254.9 a	261.7 ab	43.3	35.9
Non-Shortage	281.3	284.9	38.1	39.3
Poor Areas				
All Poor Combined	215.3 a	222.2 ab	19.5 a	14.7 ab
Urban	221.4 a	226.7 ab	19.0 a	14.2 a
Rural	191.6 a	205.2 ab	21.6 a	16.2 ab
Non- Poor	284.3	287.6	40.5	38.4
Races				
Black	195.0 a	203.0 ab	27.5 a	21.3 ab
White	293.0	294.3	40.7	39.2
Medicaid Eligible				
Yes	156.6 a	163.0 ab	20.9 a	17.8 a
No	294.9	298.4	40.9	38.7
Disabled				
Yes	225.4 a	232.6 ab	29.6 a	24.9 a
No	283.1	286.5	40.0	37.9
Age				
85 Years and over	64.1 a	66.4 a	23.7 a	24.4 a
Under 85 Years	287.2	291.3	39.3	37.0
Area of Residence				
Rural	252.0 a	257.9 ab	34.7	30.9
Urban	289.3	292.2	40.6	38.9
All Beneficiaries	279.1	282.8	38.9	36.7

a/ Significantly different from the comparison group at the 0.05 level.

b/ Significantly different from 1991 to 1992 at the 0.05 level.

NOTE: Rates for mammography are age-adjusted for female enrollees only.

SOURCE: Data derived from Medicare Part B claims for a sample of beneficiaries and Medicare Denominator Files.

Table 18

Ambulatory Care Sensitive (ACS) Hospital Admission Rates by Vulnerable Population Groups: 1991-1993

Vulnerable Population	1991	1992	1993
	Age-sex adjusted admissions per 1,000 beneficiaries		
Shortage Areas			
All Shortage Combined	71.8 a	73.1 a	77.1 ab
Urban	77.7 a	79.7 a	83.6 ab
Rural	62.5	62.6	66.9 ab
Non-Shortage	60.8	61.0	63.5 b
Poor Areas			
All Poor Combined	79.1 a	80.2 a	85.3 ab
Urban	76.6 a	77.8 a	82.6 ab
Rural	88.2 a	88.8 a	94.9 ab
Non Poor	59.9	60.2	62.2 b
Race			
Black	84.2 a	86.1 a	89.8 ab
White	59.8	59.9	62.4 b
Medicaid Eligible			
Yes	136.1 a	136.7 a	141.3 ab
No	53.2	53.3	55.2 b
Disabled			
Yes	110.7 a	112.9 a	115.5 ab
No	55.8	55.7	58.3 b
Age			
85 Years and over	130.3 a	131.6 a	132.8 ab
Under 85 Years	59.5	59.6	62.0 b
Area of Residence			
Rural	68.0 a	68.5 a	71.1 ab
Urban	58.0	59.0	61.5 b
All Beneficiaries	61.4	61.6	64.2 b

a/ Significantly different from the comparison group at the 0.05 level.
b/ Significantly different from 1991 to 1993 at the 0.05 level.

SOURCE: Data derived from Medicare Part A claims for a sample of beneficiaries and Medicare Denominator Files.

Table 19

Comparison of age-adjusted rates of selected procedures in elderly black and white Medicare beneficiaries, and 30-day post-admission death rates, 1990 and 1993

	Procedure rate						30-day post-admission death rate					
	1990			1993			1990			1993		
	Number	Rate:* 1,000	Black/white ratio	Number	Rate:* 1,000	Black/white ratio	Change in rate, 1990–93 (Percent)	Rate:** 1,000	Black/white ratio	Rate:** 1,000	Black/white ratio	Change in rate, 1990–93 (Percent)
Heart and Vascular Procedures												
Cardiac catheterization												
White	334,039	13 82	0.65	407,169	16 05	0 71	16 14	na	na	na	na	na
Black	18,689	8 97		24,198	11 32		26.20	na	na	na	na	na
Percutaneous transluminal coronary angioplasty												
White	88,594	3.56	0 40	134,083	5.29	0.46	48.60	23 88	1.16	25.70	1.05	7 62
Black	2,942	1.41		5,215	2.44		73.05	27.59		27.05		-1 96
Coronary artery bypass graft												
White	90,749	3 64	0.37	118,217	4 67	0.41	28.30	32 87	1 28	39 92	1 09	21 45
Black	2,792	1.34		4,041	1.90		41.79	42.11		43.40		3.06
Carotid endarterectomy												
White	43,314	1.73	0.30	59,502	2.33	0.31	34 68	18 54	1 28	15 93	0.90	-14 08
Black	1,090	0.52		1,550	0 72		38 46	23 66		14 29		-39 60
Orthopedic and Back Procedures												
Reduction of fracture of femur												
White	121,773	4 76	0.42	133,815	4 97	0.45	4 41	58.28	0.78	59.36	0.82	1 85
Black	4,343	2.02		5,107	2.25		11.39	45.71		48.92		7 02
Other arthroplasty of hip												
White	62,945	2.46	0.47	72,701	2.71	0.46	10 16	55.88	0.95	58.68	0.79	5 01
Black	2,474	1.15		2,826	1.25		8.70	53.35		46.58		-12 69
Total knee replacement												
White	80,990	3 24	0.62	108,742	4 28	0 64	32.10	5.52	1.59	4.35	1.25	-21 20
Black	4,256	2.02		5,917	2.72		34.65	8.75		5.44		-37 83
Total hip replacement												
White	63,260	2.52	0.45	67,134	2.62	0 48	3.97	14.71	1.05	12.02	1.64	-18.29
Black	2,408	1.14		2,755	1.27		11.40	15.42		19.73		27 95
Laminectomy												
White	33,852	1.36	0.54	38,738	1.53	0.52	12.50	11.75	1.58	9 43	1.54	-19 74
Black	1,536	0.74		1,706	0 80		8.11	18.53		14.49		-21 80
Excision of disk												
White	30,589	1 23	0.50	33,974	1 35	0.49	9 76	6 38	2.43	6.51	1.42	2.04
Black	1,289	0.62		1,401	0.66		6.45	15.48		9.26		-40 18
Spinal fusion												
White	11,387	0.46	0.61	17,435	0.70	0.59	52.17	18.87	1.11	17.73	1.04	-6.04
Black	581	0.28		870	0.41		46.43	20.99		18.41		-12 29
Other Procedures												
Prostatectomy												
White	226,416	22.41	0.91	176,706	17 00	1.04	-24.14	9.59	1.18	9.83	1.34	2.50
Black	16,911	20.44		14,858	17.71		-13.36	11.31		13.16		16.36
Cholecystectomy												
White	131,430	5.25	0.62	136,217	5.32	0.69	1.33	29 87	1.33	28.94	1.42	-3.11
Black	6,919	3.28		8,055	3.69		12.50	39.77		41.20		3.60
Repair of inguinal hernia												
White	59,174	2.34	0.72	34,968	1.33	0.88	-43.16	13.75	1.53	20.51	0.98	49.16
Black	3,489	1.68		2,510	1.17		-30.36	21.10		20.13		-4.60
Mastectomy												
White	54,284	3.61	0.75	47,102	3 09	0.82	-14.40	5.22	1.54	4.48	1.79	-14 18
Black	3,491	2.72		3,376	2.53		-6.99	8.03		8.00		-0.37
Hysterectomy												
White	51,258	3.46	0.63	52,324	3.50	0.67	1.16	7.40	2.22	7.36	1.34	-0.54
Black	2,779	2.19		3,069	2.33		6.39	16.41		9.85		-39.98
Appendectomy												
White	11,157	0.45	0.73	11,563	0.45	0.78	0.00	27.39	1.75	28.69	1.67	4.75
Black	691	0.33		764	0.35		6.06	47.84		47.91		0.15
Incidental Appendectomy												
White	10,635	0.43	0.84	11,043	0 43	0.93	0.00	30.74	1.46	39.05	1.13	27.03
Black	747	0.36		862	0 40		11.11	44.77		44.11		-1 47

* per 1,000 enrollees. ** per 1,000 discharges

SOURCE: Data from the Medicare Provider Analysis and Review files and Medicare Denominator Files.

TABLE 20

Percent of Stroke Patients Receiving Selected Diagnostic Tests and Procedures During the Initial Hospital Stay, 1991 and 1992

	Noninvasive Cerebrovascular Tests		Cerebral Angioplasty		Head CT Scans		Brain MRI Scans	
Vulnerable Population	1991	1992	1991	1992	1991	1992	1991	1992
Shortage Areas								
All Shortage Combined	35.0%	39.5%	5.3%	6.4%	74.7%	74.2%	10.7%	14.2% [b]
Urban	39.4	43.3	5.6	6.4	78.8	78.4	12.2	16.5
Rural	26.6 [a]	32.4 [a]	4.8	6.3	66.8 [a]	66.5 [a]	7.9 [a]	9.9 [a]
Non-Shortage	36.5	42.9 [b]	6.7	6.4	75.4	74.8	11.7	14.8
Poor Areas								
All Poor Combined	35.1	40.0 [b]	5.6	5.1	76.5	75.9	11.9	16.0 [b]
Urban	37.3	42.2	5.4	4.7	78.9	78.3	12.9	17.4
Rural	27.5 [a]	32.8 [ab]	6.5	6.2	68.3 [a]	68.2 [a]	8.4 [a]	11.2 [b]
Non Poor	36.6	43.0 [b]	6.7	6.5	75.2	74.6	11.6	14.6
Race								
Black	34.8	39.8 [b]	4.1 [a]	3.5 [a]	77.5	75.3	11.4	16.6 [b]
White	36.7	43.3 [b]	7.0	6.7	75.1	74.8	11.4	14.4
Medicaid Eligible								
Yes	28.9 [a]	33.3 [a]	3.3 [a]	3.4 [a]	74.7	73.9	9.0	11.3 [a]
No	38.2	44.9 [b]	7.4	7.0	75.5	74.9	12.2	15.5
Disabled								
Yes	37.2	44.1 [b]	8.3	8.4	74.0	73.5	12.5	16.4
No	36.3	42.5 [b]	6.4	6.1	75.5	74.9	11.5	14.5
Age								
85+ Years	24.2 [a]	31.0 [ab]	1.2 [a]	1.3 [a]	74.9	73.6	5.7 [a]	7.3 [a]
Less than 85	39.2	45.5 [b]	7.9	7.5	75.4	75.0	12.9	16.5
Area of Residence								
Rural	28.7 [a]	34.9 [ab]	6.1	5.7	72.6	70.6 [a]	8.8 [a]	10.8 [a]
Urban	39.5	46.0	6.9	6.6	76.4	76.4	12.7	16.4
All Patients	36.4	42.7 [b]	6.6	6.4	75.3	74.7	11.6	14.7

[a] Significantly different from the comparison group at the 0.05 level

[b] Significantly different from 1991 to 1992 at the 0.05 level

SOURCE: Data derived from Medicare Part A and Part B claims for a sample of beneficiaries

Table 21
Mean Caseload per Physician, Change and Percent Change in Mean and Median, by Specialty Group: 1992-93

Specialty (a)	1992 Mean Caseload	1993 Mean Caseload (b)	1992-93 Change in Mean Caseload	1992-93 Percent Change in Mean Caseload	1993 Median Caseload (c)	1992-93 Percent Change in Median
Primary Care	263	275	12 **	5	198	6
Family Practice	277	291	14 **	5	219	3
General Practice	266	275	8	3	188	4
Psychiatry	66	68	2	2	29	7
Medical Specialties	350	364	14 **	4	299	2
Cardiology	501	524	23 *	5	477	2
Internal Medicine	333	350	17 **	5	291	6
RAP (d)	766	806	40 *	5	341	13
Anesthesiology	230	237	7	3	192	5
Radiology	1385	1455	70	5	1210	17
Surgery	298	304	6 *	2	170	3
General Surgery	229	235	6	3	207	4
Obstetrics/Gynecology	70	76	6 **	8	51	13
Ophthalmology	764	747	-17	-2	593	-3
Orthopedic Surgery	247	250	3	1	227	1
Otolaryngology	318	315	-2	-1	259	10
Podiatry Surgery	394	403	9	2	294	-11
Urology	472	487	15	3	477	7
LLP (e)	86	86	-0	-0	40	1
Chiropractic	43	43	0	1	29	0
Optometry	155	154	-1	-1	86	5

(a) Data from the six broad specialty groups may include physicians in detailed specialties not shown

(b) Means weighted based on estimated Medicare physician populations of the 36 States.

(c) Median based on a self-weighting 2% sample from the 36 States.

(d) Subtotal for radiology, anesthesiology, and pathology.

(e) LLP = Limited license practitioners. Oral surgeons and podiatrists are also LLPs but included with Surgeons for this analysis.

* = Statistically significant at .05 level

** = Statistically significant at .01 level

SOURCE: Data derived from the Medicare Part B Monitoring System: National Claims History Physician Sample File.

Table 22

Mean Allowed Charges per Physician, Change and Percent Change in Mean and Median, by Specialty Group: 1992-93

Specialty (a)	1992 Mean Allowed Charges (b)	1993 Mean Allowed Charges (b)	1992-93 Mean Allowed Charges Change	Percent Change	1993 Median Allowed Charges (c)	1992-93 Percent Change in Median
Primary Care						
Family Practice	$45,995	$47,260	$1,265	3	$27,027	2
General Practice	42,664	43,540	876	2	26,149	18
Psychiatry	25,425	24,238	-1187	-5	27,027	21
Medical Specialties						
Cardiology	168,979	180,460	11,481 *	7	145,077	4
Internal Medicine	85,617	95,185	9,568	11	61,459	10
RAP (d)						
Anesthesiology	50,269	50,304	34	0	43,366	1
Radiology	118,659	117,438	-1221	-1	81,169	9
Surgery						
General Surgery	77,020	78,396	1,375	2	61,456	7
Obstetrics/Gynecology	10,723	10,911	188	2	6,056	7
Ophthalmology	230,816	220,775	-10041	-4	152,107	2
Orthopedic Surgery	94,172	94,191	19	0	77,771	1
Otolarynology	50,292	49,946	-347	-1	38,053	8
Podiatry Surgery	50,372	54,117	3,745	7	41,771	7
Urology	154,231	159,957	5,726	4	144,522	8
LLP (e)						
Chiropractic	6,354	6,522	168	3	4,266	7
Optometry	10,766	10,462	-305	-3	4,340	-9

(a) Data from the six broad specialty groups may include physicians in detailed specialties not shown

(b) Means weighted based on estimated Medicare physician populations of the 36 States.

(c) Median based on a self-weighting 2% sample from the 36 States.

(d) Subtotal for radiology, anesthesiology, and pathology.

(e) LLP = Limited license practitioners. Oral surgeons and podiatrists are also LLPs but included with surgeons for this analysis.

* = Statistically significant at .05 level

SOURCE: Data derived from the Medicare Part B Monitoring System: National Claims History Physician Sample File.

Table 23

Medical specialists per 100,000 Medicare beneficiaries, by Region, United States: 1984-93

Region	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	Average Annual Percent Change 1984-92	Average Annual Percent Change 1992-93
U.S. Total	839	848	856	873	899	914	918	934	950	952	1.58	0.21
Region												
Northeast	954	967	982	1,017	1,057	1,082	1,092	1,124	1,153	1,167	2.40	1.20
Midwest	751	757	764	773	793	805	804	821	836	845	1.35	1.10
South	719	731	743	763	785	795	799	811	824	820	1.72	-0.45
West	1,048	1,052	1,045	1,044	1,069	1,087	1,091	1,096	1,105	1,094	0.67	-0.95
Metropolitan Areas	992	1,002	1,012	1,034	1,065	1,083	1,089	1,110	1,132	1,135	1.67	0.20
Large Metropolitan Core	1,161	1,173	1,186	1,217	1,258	1,281	1,289	1,320	1,352	1,356	1.92	0.31
Large Metropolitan Fringe	589	599	609	628	646	659	661	671	680	695	1.79	2.31
Medium Metropolitan	823	831	839	854	876	890	895	907	920	920	1.40	0.03
Lesser Metropolitan	768	777	781	788	806	823	826	840	855	858	1.35	0.32
Nonmetropolitan Areas	380	385	388	386	394	398	394	392	389	387	0.31	-0.64
Urbanized Adjacent	485	489	492	485	497	503	499	496	492	493	0.16	0.22
Urbanized Nonadjacent	646	655	659	661	675	684	682	686	690	691	0.82	0.10
Less Urban Adjacent	322	327	332	330	334	340	334	331	328	323	0.21	-1.50
Less Urban Nonadjacent	359	363	363	360	367	369	366	362	357	355	-0.07	-0.67
Thinly Populated Adjacent	212	216	219	223	229	224	218	215	211	203	-0.07	-3.69
Thinly Populated Nonadjacent	220	224	227	223	228	226	221	217	212	207	-0.47	-2.41
Ex-Ante Impact Group												
No Change	740	752	763	783	808	826	834	850	865	873	1.96	0.95
Moderate Decrease	856	866	876	896	925	939	942	966	989	997	1.82	0.80
Large Decrease	924	932	939	949	974	989	990	998	1,009	997	1.11	1.15

NOTES: Ex Ante Impact Group refers to areas grouped according to expected changes in Medicare physician payment under physician payment reform, as published in the Federal Register 56:227. See Appendix I.

Metropolitan and nonmetroplitan areas are based upon 1990 census classifications.

SOURCE: Data derived from Area Resource Files and Medicare Denominator Files.

Appendix I

Effect of Income and Race on Access to Selected Part B Services

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Health Care Financing Administration

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Appendix I
Effect of Income and Race on Access to Selected Part B Services

INTRODUCTION

Previous analyses conducted for the annual report to Congress have relied primarily on national aggregations of utilization by basic demographic groups of the Medicare population, age, sex and race. A common finding has been that black Medicare beneficiaries use fewer services than do white Medicare beneficiaries, particularly surgical procedures and physician visits. Although the specific reasons for the racial disparities cannot be determined from the aggregate statistics, it is generally believed that at least part of the racial differences is due to underlying socio-economic differences between black and white aged populations. The purpose of this appendix is to estimate the effect of income on black/white beneficiary differences in access to physician services.

METHODS

The basic Medicare entitlement record does not contain specific information on income or other socioeconomic indicators for beneficiaries. In order to explore the issue of the effect of socioeconomic status, U.S. Census data were used as a proxy measure for socioeconomic status, specifically income. Briefly, utilization rates were calculated for Medicare beneficiaries by the ZIP Code of their residence. The medium income for each ZIP Code obtained from the 1990 U.S. Census was used to estimate household income for all aged persons living in a ZIP Code. ZIP Codes were then aggregated into 4 income levels and utilization rates were developed.

Population denominators

The population was limited to aged Medicare beneficiaries who were not members of Health Maintenance Organizations (HMOs). The counts were based on total months of non-HMO enrollment. These data were taken from the Medicare denominator file for 1993. For each ZIP Code, person-year equivalents (total months of non-HMO enrollment divided by 12) were calculated for each of three age groups (65 years of age or over-74, 75-84, 85 and over) for males and females separately, for white, black, and other race categories. Separate counts were made for Part A enrollment and Part B enrollment. In all, there were 18 cells for Part A and for Part B to use as denominators in the calculation of rates.

Utilization measures

The utilization measures were taken from 100 percent National Claims History files for 1993. A type of service classification system Berenson-Eggers Type of Service (BETOS) has been developed by the Urban Institute (Holahan, et al.) and staff in the Office of Research in Health Care Financing Administration (HCFA). HCFA Common Procedure Coding System (HCPCS) codes have been categorized into 77 specific groupings representing all services covered under the Medicare Fee Schedule, with the expectation that variations in treatment can be tracked

effectively with these distinctions[1] For example, there are 482 separate HCPCS codes representing various types and levels of physician visits and consultations which have been grouped into 6 major types: office (including outpatient departments), hospital (inpatient only), emergency room, nursing home and home, specialist, and consultations. A detailed description of this service classification system was presented in last years Report to Congress. Nine categories of physician services defined by BETOS groupings were selected for this analysis.

1. M1, Office Visits, number of services
2. M3, Emergency Room Visits, number of services
3. M4, Home/Nursing Home Visits, number of services
4. M5, Specialist Visits, number of services
5. M6, Consultations, number of services
6. P4B, Eye Procedures - Cataract Removal/Lens Implant, number of services
7. I2A+I2B, CAT scans - number of services
8. I2C+I2D, MRI - number of services
9. I1C, Standard Imaging - Breast - number of services

Each of these categories were matched to ZIP Codes by the 18 age, sex, and race categories described above.

Income Estimation from Census Data

The Census files contain estimates of the number of families by income grouping (less than $5,000, $5,001 to $10,000, etc.). These estimates were available for families headed by persons age 65 years of age or over and over, for all races combined, for white and for black persons. Using an algorithm developed by the U.S. Census Bureau (see Technical Note), median income levels were calculated for (1) all families headed by a person age 65 years of age or over and over, (2) families headed by a white person age 65 years of age or over and over and, (3) families headed by a black person age 65 years of age or over and over.

It was decided to categorize ZIP Codes into quartiles of median income levels. The quartiles were defined on the basis of population size not on the number of ZIP Codes. That is, one fourth of the total Part A Medicare aged population is in each of the quartile ranges. The resulting quartile groupings are shown below:

	Median Household Income Quartiles
1	$20,501 and over
2	$16,301 to $20,500
3	$13,101 to $16,300
4	$13,000 and under

Not all Medicare beneficiaries had ZIP Codes that could be matched with a Census ZIP Code income level. Many persons had incorrect or missing ZIP Codes. In addition, the U.S. Postal Service makes annual additions to ZIP Codes that are represented in Medicare 1993 enrollment

[1]The entire classification system includes all part B services processed by Medicare carriers, including durable medical equipment, laboratory tests, drugs and ambulance services. There are 104 categories in all.

files but would not be present in the 1990 Census of the population. Overall, there were almost 1.3 million persons who could not be matched to an income grouping (4.4 percent of the Medicare population). There were 4.2 percent of white beneficiaries and 6.4 percent of black beneficiaries who could not be matched with a ZIP Code income grouping. Utilization rates were calculated for these persons as well and, although not reported, the use rates for these persons were usually very close to the overall average.

White beneficiaries were aggregated into ZIP Code income groupings as shown above on the basis of the median white income for the ZIP Code of residence. Similarly, black beneficiaries were categorized on the basis of median black income levels. The distribution of the white and black beneficiary populations is shown below:

Median Household Income Quartile	Population Distribution White	Black
$20,501 and over	27.6%	6.2%
$16,301 to $20,500	27.2%	7.4%
$13,101 to $16,300	26.0%	13.3%
$13,000 and under	19.2%	73.0%
All groups	100.0%	100.0%

The distribution of persons by race reflects the underlying difference in income levels in the U.S. Only 19.2 percent of white aged Medicare beneficiaries live in ZIP Code areas where the white median income is in the lowest quartile of the overall income distribution. However, almost three-fourths (73 percent) of black aged Medicare beneficiaries live in ZIP Code areas where the black median income is in the lowest quartile.

RESULTS

Table 1 shows the Part B person year denominators used to calculate the utilization rates. Overall there are 24.6 million white (9.8 million male and 14.8 million female) and 2.1 million black (0.8 million male and 1.3 million female) beneficiaries included in the analyses. Forty percent of the white beneficiaries are males compared with 37 percent for the black beneficiaries. The male to female ratio declines with age for both white and black race groups, males account for slightly more than one-fourth of persons aged 85 years and over for both race groups.

Table 2 shows mortality rates in 1993 for the white and black Medicare population by age and sex and by income quartile groupings. The crude mortality rate is 6.1 for white males and 4.9 percent

for white females. The crude mortality rates are higher for blacks. 7.5 percent for black males and 5.5 percent for black females.

Mortality rates increase markedly with age, usually doubling with each 10 year increment. Among white males, annual mortality is 3.5 percent for persons 65 years of age or over to 74, 8.1 percent for persons 75 to 84 and 19.0 percent for persons 85 and over; among black males, annual mortality increases from 5.1 percent for persons 65 years of age or over to 74 to 16.9 percent for those 85 and over. As has been shown elsewhere, such as the National Center for Health Statistics (NCHS), there is a "crossover" in mortality between whites and blacks in the over age 85 category. Below that age, mortality is lower among white beneficiaries. Above that age, lower mortality is found among the black population.

Because females are, on average, older than males, age adjustment[2] has the effect of increasing mortality for males and decreasing mortality for females. The age adjusted mortality rate for white females (4.5 percent) is 33 percent lower than the age adjusted rate for white males (6.7 percent); similarly, the age adjusted mortality rate for black females (5.2 percent) is 35 percent lower than for black males (8.0 percent).

Table 2 also shows the effect of income on mortality rates. In general, mortality rates are higher in lower income areas. However, the effect varies considerably by race and sex. The most marked effect of income is found for white males where there is a 19 percent difference in age adjusted mortality; 6.2 percent in the highest income ZIP Code areas ($20,501 and over) and 7.3 percent in the lowest income ZIP Code areas (less than $13,100). For white females and black males the effect is not nearly so apparent, although the lowest mortality rates are still found in the highest income ZIP Code areas. However, there is only a 5 or 6 percent increase in mortality in the lower income areas. For black females, there is no consistent income effect on mortality. Mortality rates are slightly lower in the second highest income quartile and lowest income quartile than in the highest income quartile.

Table 3 shows the use of ambulatory physician services in 1993 by income areas. The table indicates that utilization increases with age, is higher among females than among males, and that whites have higher utilization rates than do blacks. The income effect is more consistent here than it was for mortality, and is in the opposite direction. That is, utilization decreases with decreasing income level. The greatest income effect is found for white males, where the rate of ambulatory physician visits is 22 percent lower in the lowest income group (6.8 visits per person) compared to the highest income category (8.7 visits). For white females there is a 16 percent differential between the highest income group (9.2 visits) and the lowest income group (7.7 visits). Among black beneficiaries the income effect was somewhat less pronounced, but still evident with a 14 percent and 10 percent differential between the high and low quartile areas for males and females, respectively.

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[2]Male and female rates were adjusted to the age distribution of the entire Medicare population, including persons of other or unknown race.

An opposite income effect is evident for emergency room visits[1], a service generally associated both with low income groups and black beneficiaries (Table 4). Emergency room physician visits increase slightly with age and are higher among black beneficiaries. There is very little difference between males and females in emergency room use.

Emergency room use is highly related to income. In general, higher emergency room use rates are found in the lowest income areas. Among white beneficiaries, utilization rates in the lowest quartile income areas are about one-third greater than in the highest quartile income areas. Among black beneficiaries, both male and female rates are about 16 to 18 percent higher in the lower two quartile groupings than the highest income quartile.

One of the most frequently performed surgical procedures among the Medicare population is cataract removal with an artificial lens implant. Overall, there were about 4.5 of these procedures per 100 beneficiaries in 1993 (Table 5). Rates are higher for females than for males and are higher for whites than for blacks. Rates are lowest for persons ages 65 years of age or over to 74. However, among females, higher rates are found in the age group 75 to 84 than in the 85 and over age group. Among white men the rate is similar in the two oldest age groups while among black men the highest rate is in the oldest age group.

Income effects are not particularly strong for this surgical procedure. Cataract surgery rates for white beneficiaries increase as income decreases, although not greatly, only 3 percent for males and only 8 percent among females. For blacks, higher use rates in lower income areas are more pronounced with a 15 to 16 percent higher rate in the lowest income quartile compared to the highest income quartile.

Imaging procedures are shown in Table 6 (Computerized Axial Tomography (CAT) scans) and Table 7 (Magnetic Resonance Imaging (MRI)). Overall, in 1993 there were about 23 CAT scans and 4.3 MRI procedures per 100 Medicare aged persons. CAT scan use increases with age, is performed more frequently for males than for females, and is performed somewhat more frequently among black beneficiaries than among white beneficiaries.

There is very little to suggest a strong income effect on access to CAT scans. For white males, CAT scan use is about 6 percent lower in the lowest income quartile compared to the highest income quartile. For white females the use rates are nearly identical across all income quartile groupings. For black beneficiaries, the lowest rates are found in the lowest income quartile for both males and females. However, the income effect is not monotonic. Persons living in the second lowest quartile have CAT scan use rates as high as the highest income quartile.

MRI use is highest in the 75 to 84 age group, is similar between males and females, and is higher among whites than blacks. Income effects are more noticeable for MRI services (Table 7). Use

[1]Emergency room visits are also included in the ambulatory visit rates shown in Table 1. Overall, emergency room visits account for about 5 percent of all ambulatory physician encounters.

rates are consistently highest in the highest income quartile for all four sex/race categories. The income effect is greater for whites than for blacks. For white males and females, use rates in the lowest income quartile are 43 percent and 34 percent lower, respectively, than their counterparts in the highest income quartiles. For black males there is a 31 percent differential between the highest income group (4.7 per 100) compared to the lowest income group (3.3 per 100). For black females, the lowest income group rate (3.3 per 100) is 24 percent lower than in the highest income group (4.4 per 100).

Standard imaging of the breast (mammography) is shown in Table 8[4]. In 1993, the overall rate of breast imaging was 24 per 100 persons, 26.0 percent among white females and 17.1 percent among black females. Breast imaging decreases markedly with age, among white females from 32.3 per 100 for ages 65 years of age or over to 7.4 to 7.2 percent in the age group 85 and over.

Income had a strong effect on use for white females, with rates decreasing by 33 percent from the highest income quartile to the lowest income quartile (31.0 per 100 and 20.8 per 100, respectively). Among black females, use rates were about 20 per 100 for each of the three highest income quartiles. However, in the lowest income quartile (which includes about 75 percent of all black beneficiaries), the use rate was only 16.0 per 100, 21 percent below the highest income quartile.

Table 9 shows age and sex adjusted rates for all six selected Medicare Fee Schedule (MFS) services shown in Tables 3 through 8, for both white and black beneficiaries. The rates are shown by quartile income groupings as well as for the United States as a whole. In addition, white and black rates are shown as "income adjusted" rates. As discussed above, white beneficiaries are skewed slightly toward the upper end of the distribution (27.6 percent of white beneficiaries live in ZIP Codes in the top income quartile). On the other hand, 73 percent of black beneficiaries fall into the lowest quartile group. The income adjustment is the conventional standardization technique. That is, each income group rate is weighted as if each quartile represented exactly on-fourth of that racial group. For whites, this gives slightly more weight to the rates in the lower three income quartiles. For blacks, considerably more weight is given to the rates found in the higher three income quartiles. In essence, the results are white and black rates, as if both races had identical income distributions.

The effect of income adjustment is shown most clearly with ambulatory physician visits. The U.S. total age/sex adjusted rates for whites and blacks are 8.1 and 7.2 visits per person, respectively. The black/white use ratio is thus 0.89 (the black rate is 11 percent lower than the white rate). Although the rates decrease for both races with descending median income, the rates decline more steeply for whites than for blacks. Consequently, the relative difference between blacks and whites is less in the lower two quartiles than in the higher two quartiles. Adjusting the white and

[4]This category is very nearly identical to mammograms. About 98 percent of the imaging in this category are mammograms, both preventive and diagnostic. The remaining 2 percent are ductograms, radiological wire placements and radiological exams of surgical specimens. Although a very small number of mammograms are performed on male beneficiaries, only the female rates are displayed.

black rates to the overall income distribution does not change the white rates but increases the black rate from 7.2 to 7.6 visits. As a result, the black rate is 7 percent lower than the white rate, after adjusted income differences, compared to the 11 percent difference based on age/sex adjustment alone.

Emergency room visits account for about 5 percent of all ambulatory physician visits. The use rate for these services is about 45 percent greater among black beneficiaries than among white beneficiaries. In the lowest income grouping, the black rate is only 30 percent greater than the white rate. Income adjustment somewhat reduces the black/white ratio for emergency room visits from 1.45 to 1.37.

Cataract removal/lens insertion is done more frequently for white beneficiaries than for black beneficiaries (4.7 and 3.8 services per 100 persons, respectively). Unlike other services included in this analysis, utilization increases with decreasing income level. The effect of income adjustment is to increase the relative difference between blacks and whites, from a 0.81 relative use ratio based on age/sex adjustment to a 0.77 ratio when accounting for income.

Two related sophisticated imaging procedures were included in this analysis, computerized axial tomography (CAT) and magnetic resonance imaging (MRI). Of the two, MRI is the more recently developed technology. Interestingly, CAT scans are done about 13 percent more frequently for black beneficiaries than for white beneficiaries. This difference is actually a little greater in the higher income groups. Consequently, the income adjustment increases the differential to about 19 percent. Use of MRIs is very strongly related to income, particularly for white beneficiaries. Although blacks have a 17 percent lower use rate in the highest income category, in the other three quartile groups, there is little difference between the two races. In fact, the large income differences between white and black is such that the overall difference of 19 percent (4.3 and 3.5 per 100 persons for whites and blacks, respectively) is greater than any of the four individual quartile group differences. Adjusting for income differences removes most of the black/white differential, reducing the overall difference ratio to 0.95.

The last service category shown in Table 9 is standard imaging of the breast. As with MRI use, the age adjusted rate difference between blacks and whites is not reflective of the income specific differences. The largest difference between blacks and whites is in the highest income quartile where the black rates is about one-third lower than the white rate. Adjusting for income reduces the overall age adjusted black/white difference from 0.66 to 0.75.

SUMMARY

The results of four of the six physician services studied here support the hypothesis that socioeconomic status (as represented by income) accounts for part of black/white differences in access to physician services. For three of the services examined (ambulatory physician services, MRI use and standard imaging of the breast) use rates were higher for white beneficiaries than for black beneficiaries. However, this racial difference was less pronounced in the lower income categories. As a result, adjusting for income differences reduces the relative difference between

black and white use rates. Similarly, one service in which the use rate is distinctly higher among black beneficiaries (emergency room physician services) is also income related and the income adjustment reduces racial differences.

Two services do not follow this general pattern. Cataract removal/lens implants are actually more commonly done among persons (both black and white) living in lower income groups. It thus appears that the black/white difference is actually greater than the non income adjusted rates would suggest. Income adjustment also increases the racial disparity for CAT scan use. In this case, the black rate is higher to begin with and is even higher when income is included. Thus it appears that income, or socioeconomic status, does play a significant role in use of services. However, that role is a complex one and is not consistent across all types of services.

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Technical Note. Calculation of ZIP Code Medium Income

Income information used to estimate ZIP Code specific income levels came from the Census of Population and Housing, 1990 Summary Tape File 3B. For each ZIP Code, this file contains a count of the number of households in 1989 with either a Caucasian or an African American householder for the two relevant age groups, 65 to 74 years of age and 75 years of age and over, for 9 income intervals (less than $5,000, $5,000 to $9,999; $10,000 to $14,999; $15,000 to 23,999; $24,000 to $34,999, $35,000 to $49,999; $50,000 to $74,999, $75,000 to $99,999, and $100,000 or more).

Income information was available for 29,467 ZIP Codes. For none of these was the median household income greater than $99,999. Based on published 1990 U.S. Bureau of Census data for all households headed by persons 65 years of age and over, it was assumed that 22.2 percent of household incomes in the lowest interval were less than $2,500. Also, it was assumed that incomes were distributed in a linear fashion in that interval. Thus, median household income values which fell in this income interval were calculated by linear interpolation along the line defined by the y and x coordinates of 0, $0; .222, $2,500; and 1.0, $5,000. For the other eight income intervals, it was assumed that the distributions of incomes were best approximated by the Pareto distribution. This second assumption was based on the recommendation of staff of the U.S. Bureau of the Census, Housing and Household Economic Division. Calculation of the median household income values which fell into the eight highest income intervals were calculated using codes provided by this Division.

Table 1-1

Medicare Beneficiaries: 1993

by Age, Sex, Race and Income level of Zipcode of Residence

	Age Group			All	Percent
Income Level	65 to 74	75 to 84	85 +	Ages	Dist.
White Male					
Total	5,896,683	3,149,702	754,544	9,800,929	100.0
$20,501 and over	1,578,019	825,030	194,047	2,597,096	27.7
$16,301 to $20,500	1,524,441	817,307	191,842	2,533,590	27.0
$13,101 to $16,300	1,449,852	790,643	191,056	2,431,551	25.9
LE $13,100	1,082,443	585,258	145,595	1,813,296	19.3
Unknown	261,928	131,464	32,004	425,396	---
White Female					
Total	7,490,539	5,211,814	2,094,595	14,796,948	100.0
$20,501 and over	1,993,157	1,325,578	560,475	3,879,210	27.2
$16,301 to $20,500	1,974,229	1,371,488	540,153	3,885,870	27.3
$13,101 to $16,300	1,871,946	1,339,772	528,857	3,740,575	26.2
LE $13,100	1,364,388	996,091	390,591	2,751,070	19.3
Unknown	286,819	178,885	74,519	540,223	---
Black Male					
Total	489,331	235,131	63,142	787,604	100.0
$20,501 and over	31,198	12,398	2,919	46,515	6.3
$16,301 to $20,500	36,733	14,628	3,226	54,587	7.4
$13,101 to $16,300	65,049	28,012	6,434	99,495	13.6
LE $13,100	322,683	163,999	45,946	532,628	72.6
Unknown	33,668	16,094	4,617	54,379	---
Black female					
Total	705,202	444,256	175,706	1,325,164	100.0
$20,501 and over	42,923	23,886	9,048	75,857	6.1
$16,301 to $20,500	51,721	27,918	9,850	89,489	7.1
$13,101 to $16,300	92,563	52,412	18,892	163,867	13.1
LE $13,100	479,375	316,097	127,503	922,975	73.7
Unknown	38,620	23,943	10,413	72,976	---

NOTE: Counts are of Part B Person Years, excluding HMO enrollment.

SOURCES: 1993 Medicare Denominator File and 1990 Census of the Population.

Table 1-2

Mortality Rate: Deaths per 100 Medicare Beneficiaries, Ages 65 and over: 1993

Income Level	Age Group			Crude	Age Adj	Relative Mortality
	65 to 74	75 to 84	85 +	Total	Total	Adj Total
White Male						
Total	3.5	8.1	19.0	6.1	6.7	
$20,501 and over	2.9	7.3	18.9	5.4	6.2	1.00
$16,301 to $20,500	3.5	8.1	19.2	6.1	6.8	1.10
$13,101 to $16,300	3.8	8.5	19.3	6.5	7.1	1.14
LE $13,100	4.0	8.9	19.1	6.8	7.3	1.19
White Female						
Total	2.1	5.1	14.8	4.9	4.5	
$20,501 and over	1.8	5.0	15.3	4.8	4.4	1.00
$16,301 to $20,500	2.1	5.1	14.9	4.9	4.5	1.03
$13,101 to $16,300	2.1	5.1	14.7	5.0	4.5	1.04
LE $13,100	2.2	5.2	14.5	5.1	4.6	1.05
Black Male						
Total	5.1	9.8	16.9	7.5	8.0	
$20,501 and over	4.4	9.9	17.6	6.6	7.7	1.00
$16,301 to $20,500	4.6	9.5	18.1	6.6	7.8	1.01
$13,101 to $16,300	5.0	9.6	18.2	7.1	8.0	1.04
LE $13,100	5.3	9.9	16.7	7.8	8.1	1.06
Black Female						
Total	3.1	6.3	12.9	5.5	5.2	
$20,501 and over	2.7	6.7	14.7	5.3	5.3	1.00
$16,301 to $20,500	2.8	5.9	13.6	4.9	5.0	0.94
$13,101 to $16,300	3.0	6.3	14.1	5.3	5.3	1.00
LE $13,100	3.1	6.2	12.5	5.5	5.2	0.97

NOTE: Rates are based on Part A Person Years, excluding HMO enrollment.

SOURCES: 1993 Medicare Denominator File and 1990 Census of the Population.

Table 1-3
Ambulatory Physician Use: Visits per Person: 1993

Income Level	Age Group 65 to 74	75 to 84	85 +	Crude Total	Age Adj Total	Relative Use Adj Total
White Male						
Total	6.6	9.0	9.8	7.6	7.8	
$20,501 and over	7.4	10.2	11.1	8.6	8.7	1.00
$16,301 to $20,500	6.8	9.3	10.1	7.8	8.0	0.91
$13,101 to $16,300	6.2	8.4	9.1	7.1	7.2	0.83
LE $13,100	5.8	7.9	8.6	6.7	6.8	0.78
White Female						
Total	7.7	9.2	9.6	8.5	8.4	
$20,501 and over	8.4	10.1	10.5	9.3	9.2	1.00
$16,301 to $20,500	7.8	9.4	9.8	8.6	8.5	0.93
$13,101 to $16,300	7.3	8.7	9.0	8.0	7.9	0.86
LE $13,100	7.1	8.4	8.8	7.8	7.7	0.84
Black Male						
Total	5.6	7.5	8.2	6.4	6.5	
$20,501 and over	6.3	8.4	9.2	7.0	7.3	1.00
$16,301 to $20,500	5.6	7.8	8.9	6.4	6.7	0.92
$13,101 to $16,300	6.1	8.2	8.9	6.9	7.1	0.97
LE $13,100	5.4	7.2	8.0	6.2	6.3	0.86
Black Female						
Total	7.3	8.4	8.7	7.8	7.8	
$20,501 and over	7.8	9.3	9.8	8.5	8.5	1.00
$16,301 to $20,500	7.1	8.6	9.4	7.9	7.9	0.93
$13,101 to $16,300	7.5	8.9	9.4	8.2	8.2	0.96
LE $13,100	7.2	8.2	8.4	7.7	7.6	0.90

NOTE: Rates are based on Part B Person Years, excluding HMO enrollment.
SOURCES: 1993 National Claims History, 1993 Medicare Denominator file, and the 1990 Census of the Population.

Table 1-4

Emergency Room Physician Use: Visits per 100 Persons: 1993

Income Level	Age Group 65 to 74	75 to 84	85 +	Crude Total	Age Adj Total	Relative Use Adj Total
White Male						
Total	25.8	41.8	65.6	34.0	35.5	
$20,501 and over	21.0	36.1	60.4	28.7	30.3	1.00
$16,301 to $20,500	25.5	41.9	66.2	33.9	35.4	1.17
$13,101 to $16,300	27.7	43.8	66.8	36.0	37.4	1.23
LE $13,100	30.0	46.4	69.8	38.5	39.8	1.31
White Female						
Total	26.3	40.9	59.7	36.2	34.8	
$20,501 and over	20.6	35.3	54.5	30.5	29.2	1.00
$16,301 to $20,500	25.6	40.4	60.1	35.6	34.3	1.18
$13,101 to $16,300	28.4	42.4	60.8	38.0	36.6	1.25
LE $13,100	31.8	45.8	64.9	41.6	40.1	1.37
Black Male						
Total	42.0	58.7	81.8	50.2	51.9	
$20,501 and over	34.8	52.3	82.4	42.4	45.8	1.00
$16,301 to $20,500	35.4	53.1	83.1	43.0	46.5	1.02
$13,101 to $16,300	41.9	62.7	87.3	50.7	53.7	1.17
LE $13,100	43.6	59.5	81.7	51.8	53.1	1.16
Black Female						
Total	43.0	54.2	73.6	50.8	50.1	
$20,501 and over	35.4	49.1	68.4	43.7	43.6	1.00
$16,301 to $20,500	37.0	51.2	73.4	45.4	45.7	1.05
$13,101 to $16,300	42.8	56.9	79.0	51.5	51.5	1.18
LE $13,100	44.4	54.5	73.7	51.9	50.9	1.17

NOTE: Rates are based on Part B Person Years, excluding HMO enrollment.

SOURCES: 1993 National Claims History, 1993 Medicare Denominator File, Census of the Population.

Table 1-5

Cataract Removal Lens Implant Use: Services per 100 Persons: 1993

Income Level	Age Group 65 to 74	75 to 84	85 +	Crude Total	Age Adj Total	Relative Use Adj Total
White Male						
Total	2.9	5.8	5.7	4.0	4.2	
$20,501 and over	2.8	5.8	5.8	4.0	4.1	1.00
$16,301 to $20,500	2.9	5.9	5.9	4.1	4.2	1.02
$13,101 to $16,300	2.9	5.8	5.8	4.0	4.1	1.01
LE $13,100	3.1	5.8	5.5	4.2	4.2	1.03
White Female						
Total	3.8	7.1	5.2	5.2	5.0	
$20,501 and over	3.6	7.0	5.1	5.0	4.9	1.00
$16,301 to $20,500	3.8	7.1	5.3	5.2	5.0	1.04
$13,101 to $16,300	3.9	7.1	5.4	5.3	5.1	1.06
LE $13,100	4.1	7.2	5.4	5.4	5.3	1.08
Black Male						
Total	2.3	4.4	4.7	3.1	3.2	
$20,501 and over	2.0	3.9	4.1	2.6	2.9	1.00
$16,301 to $20,500	2.0	4.0	4.4	2.6	2.9	1.01
$13,101 to $16,300	2.3	4.3	4.6	3.0	3.2	1.13
LE $13,100	2.3	4.5	4.8	3.2	3.3	1.16
Black Female						
Total	3.3	5.6	4.5	4.2	4.2	
$20,501 and over	2.8	5.3	3.7	3.7	3.7	1.00
$16,301 to $20,500	3.0	5.2	4.5	3.8	3.9	1.03
$13,101 to $16,300	3.1	5.4	4.2	4.0	4.0	1.07
LE $13,100	3.5	5.7	4.6	4.4	4.3	1.15

NOTE: Rates are based on Part B Person Years, excluding HMO enrollment.

SOURCES: 1993 National Claims History, 1993 Medicare Denominator File, and 1990 Census of the Population.

Table 1-6

CAT Scan Use: Services per 100 Persons: 1993

Income Level	Age Group 65 to 74	75 to 84	85 +	Crude Total	Age Adj Total	Relative Use Adj Total
White Male						
Total	20.6	29.7	30.4	24.3	24.7	
$20,501 and over	20.8	30.8	32.3	24.8	25.3	1.00
$16,301 to $20,500	21.3	30.8	32.0	25.2	25.6	1.01
$13,101 to $16,300	20.5	29.1	29.2	24.0	24.3	0.96
LE $13,100	20.1	28.3	28.8	23.4	23.7	0.94
White Female						
Total	18.2	24.0	22.8	20.9	20.6	
$20,501 and over	17.8	24.3	23.2	20.8	20.5	1.00
$16,301 to $20,500	18.6	24.7	23.8	21.5	21.2	1.03
$13,101 to $16,300	18.3	23.6	22.3	20.7	20.4	1.00
LE $13,100	18.5	23.5	22.0	20.8	20.6	1.00
Black Male						
Total	23.5	32.5	34.5	27.1	27.7	
$20,501 and over	25.4	36.8	41.2	29.4	30.9	1.00
$16,301 to $20,500	23.8	34.7	40.8	27.7	29.2	0.95
$13,101 to $16,300	26.8	37.0	41.3	30.6	31.8	1.03
LE $13,100	23.2	31.9	33.6	26.8	27.2	0.88
Black Female						
Total	20.7	26.4	28.0	23.6	23.4	
$20,501 and over	21.5	29.5	33.0	25.4	25.4	1.00
$16,301 to $20,500	21.1	28.6	32.0	24.6	24.7	0.97
$13,101 to $16,300	22.2	30.0	30.9	25.7	25.7	1.01
LE $13,100	20.6	25.7	27.4	23.3	23.0	0.91

NOTE: Rates are based on Part B Person Years, excluding HMO enrollment.

SOURCES: 1993 National Claims History, 1993 Medicare Denominator File, and 1990 Census of the Population.

Table 1-7

Magnetic Resonance Imaging: Services per 100 Persons: 1993

Income Level	Age Group 65 to 74	75 to 84	85 +	Crude Total	Age Adj Total	Relative Use Adj Total
White Male						
Total	4.4	5.0	3.1	4.5	4.5	
$20,501 and over	5.6	6.9	4.5	5.9	5.9	1.00
$16,301 to $20,500	4.5	5.1	3.1	4.6	4.5	0.77
$13,101 to $16,300	3.8	4.2	2.5	3.9	3.8	0.65
LE $13,100	3.5	3.6	2.2	3.4	3.4	0.57
White Female						
Total	4.5	4.5	2.2	4.2	4.3	
$20,501 and over	5.5	5.7	2.9	5.2	5.3	1.00
$16,301 to $20,500	4.7	4.6	2.3	4.3	4.4	0.83
$13,101 to $16,300	4.1	3.9	1.9	3.7	3.8	0.72
LE $13,100	3.8	3.5	1.7	3.4	3.5	0.66
Black Male						
Total	3.6	3.8	2.4	3.5	3.5	
$20,501 and over	4.6	5.4	3.6	4.8	4.7	1.00
$16,301 to $20,500	4.3	4.9	3.7	4.4	4.4	0.93
$13,101 to $16,300	4.4	4.7	2.9	4.4	4.3	0.91
LE $13,100	3.3	3.5	2.3	3.3	3.3	0.69
Black Female						
Total	3.8	3.5	2.0	3.5	3.5	
$20,501 and over	4.9	4.3	2.4	4.4	4.4	1.00
$16,301 to $20,500	4.5	4.3	2.3	4.2	4.2	0.94
$13,101 to $16,300	4.5	4.5	2.8	4.3	4.3	0.97
LE $13,100	3.6	3.3	1.8	3.2	3.3	0.74

NOTE: Rates are based on Part B Person Years, excluding HMO enrollment.

SOURCES: 1993 National Claims History, 1993 Medicare Denominator File and 1990 Census of the Population.

Table I-8

Standard Imaging - Breast: Services per 100 Persons: 1993

Income Level	Age Group 65 to 74	75 to 84	85 +	Crude Total	Age Adj Total	Relative Use Adj Total
White Female						
Total	32.3	21.8	7.2	25.0	26.0	
$20,501 and over	38.2	26.5	8.5	29.9	31.0	1.00
$16,301 to $20,500	33.5	23.0	7.8	26.2	27.2	0.88
$13,101 to $16,300	30.0	20.0	6.8	23.1	24.1	0.78
LE $13,100	26.1	16.9	5.7	19.9	20.8	0.67
Black Female						
Total	20.9	14.4	5.8	16.7	17.1	
$20,501 and over	25.2	17.0	6.4	20.4	20.4	1.00
$16,301 to $20,500	24.2	17.1	6.5	20.0	19.9	0.98
$13,101 to $16,300	25.5	18.3	7.0	21.1	21.1	1.03
LE $13,100	19.5	13.5	5.7	15.6	16.0	0.79

NOTE: Rates are based on Part B Person Years, excluding HMO enrollment.

SOURDCES: 1993 National Claims History, 1993 Medicare Denominator File, and 1990 Census of the Population.

Table 1-9

Use of Selected Services Covered Under the Medicare Fee Schedule: 1993

White and Black Beneficiaries, by income of Zip Code of Residence/m

	Ambulatory Physician Visits*		Emergency Room Physician Visits		Cataract Removal/ Lens Insertion		Computerized Axial Tomography Scans		Magnetic Resonance Imaging Procedures		Standard Imaging Breast Procedure**	
	AR	RR	AR	RR	AR	RR	AR	RR	AR	RR	AR	RR
ALL PERSONS:												
Total	8.0		36.0		4.6		22.2		4.2		25.0	
$20,501 and over	8.9	1.00	29.7	1.00	4.5	1.00	22.2	1.00	5.4	1.00	30.2	1.00
$16,301 to $20,500	8.2	0.93	34.9	1.18	4.6	1.03	22.8	1.03	4.4	0.82	26.7	0.88
$13,101 to $16,300	7.6	0.86	37.6	1.27	4.6	1.03	22.2	1.00	3.8	0.71	23.8	0.79
LE $13,100	7.3	0.83	41.3	1.39	4.7	1.05	22.2	1.00	3.4	0.64	20.0	0.66
WHITE:												
Total	8.1		35.0		4.7		22.1		4.3		26.0	
$20,501 and over	9.0	1.00	29.6	1.00	4.5	1.00	22.3	1.00	5.5	1.00	31.0	1.00
$16,301 to $20,500	8.3	0.92	34.6	1.17	4.7	1.03	22.9	1.02	4.4	0.81	27.2	0.88
$13,101 to $16,300	7.6	0.85	36.8	1.24	4.7	1.04	21.9	0.98	3.8	0.69	24.1	0.78
LE $13,100	7.3	0.82	39.9	1.35	4.8	1.07	21.7	0.97	3.4	0.62	20.8	0.67
Income Adjusted	8.1		35.4		4.7		22.2		4.3		25.7	
BLACK:												
Total	7.2		50.6		3.8		25.0		3.5		17.1	
$20,501 and over	8.0	1.00	44.2	1.00	3.4	1.00	27.5	1.00	4.5	1.00	20.4	1.00
$16,301 to $20,500	7.4	0.92	45.8	1.04	3.5	1.03	26.4	0.96	4.3	0.94	19.9	0.98
$13,101 to $16,300	7.7	0.97	52.2	1.18	3.7	1.09	28.1	1.02	4.3	0.95	21.1	1.03
LE $13,100	7.1	0.88	51.6	1.17	3.9	1.16	24.6	0.89	3.3	0.72	16.0	0.79
Income Adjusted	7.6		48.6		3.6		26.5		4.1		19.2	
BLACK/WHITE RATIO:												
Total		0.89		1.45		0.81		1.13		0.81		0.66
Income Adjusted		0.93		1.37		0.77		1.19		0.95		0.75

Key: AR = rate per 100 beneficiaries, adjusted for age and sex; RR = income quartile and Black/White Ratios

* = Ambulatory visit rates are calculated on a per person basis

** = Breast procedures are calculated for females only

SOURCES: 1993 National Claims History, 1993 Medicare Denominator File, and the 1990 Census of the Population.

Appendix II
The Effect of Income and Race on Access to Selected Part A Procedures

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Appendix II
The Effect of Income and Race on Access to Selected Part A Procedures

INTRODUCTION

The Medicare program was implemented to improve beneficiary access to covered services. In recent years, a number of studies have shown substantial differences by race in the rate of surgical procedures performed in the hospital. For example, McBean and Gornick (1994) in a Medicare study of 16 major procedures performed in the hospital in 1992 found that rates were lower for black beneficiaries than for white beneficiaries. At the same time, certain procedures were found to be more frequent among black beneficiaries than among white beneficiaries. The rates of excisional debridement, arteriovenostomy, and bilateral orchiectomy were higher for black beneficiaries than the rates were for white beneficiaries in 1986 and 1992. Similar results were found in 1993.

The reasons for such differences are not well understood. Socioeconomic status (SES) may help account for racial differences. It is widely recognized that the black population on the average is economically and educationally disadvantaged relative to the white population. However, little prior research has focused on differences in surgical procedure rates for Medicare beneficiaries of different SES levels. It may be that low income--used in this appendix as an overall measure for SES--acts as a barrier to obtaining needed medical services. By examining the relationship between income level and surgical utilization for black beneficiaries and white beneficiaries an understanding may be derived of the racial differences in the performance of surgical procedures reported previously.

This study was designed to explore the effect of income on differences by race in certain utilization patterns of hospitalized patients. It will focus on three issues. First, the extent to which the rates of hospitalization for certain heart and vascular diagnoses differ by income level for Medicare beneficiaries. Second, the same issue for a select group of procedures. Third, the extent to which adjusting for income accounts for black:white differences observed for these diagnoses and procedures.

METHODS

The analysis was performed for 5 diagnoses and for 19 procedures for hospitalizations in 1993. The five diagnoses studied are all heart and vascular-related. There are four heart procedures, seven orthopedic and back procedures, five other procedures that are prominent in the Medicare population, and three procedures that were chosen because the rates were higher for black beneficiaries than they were for white beneficiaries. The diagnoses and procedures are coded using the *International Classification of Disease, Ninth Revision, Clinical Modification*

(ICD-9-CM). Technical Note A at the end of Appendix II identifies each of the diagnoses and procedures and the codes used to define them.

Data for the numerators of the rates to be calculated for these diagnoses and procedures were derived from the Medicare provider analysis and review (MEDPAR) file, for calendar year 1993. The MEDPAR file contains one record for each Medicare-covered stay in a short-stay hospital. Each MEDPAR record may represent one claim or multiple claims, depending on the length of a beneficiary's stay and the amount of inpatient services used by the beneficiary throughout the stay. Each record contains dates of admission and discharge, up to ten diagnoses and six procedures. The diagnoses for which rates were computed were counted if the ICD-9-CM diagnosis was listed as the principal diagnosis. That is, the condition was established by the facility submitting the claim as the chief reason after study for the hospital admission. A procedure was counted if it appeared in any of the fields reserved on the record for procedures. Therefore, a single hospital stay could have more than one of the selected procedures. For example, percutaneous transluminal coronary angioplasty (PTCA) and coronary artery bypass graft (CABG) could have occurred during the same hospitalization and would be included in the numerator for each procedure. In addition, as noted in Technical Note A, several of the heart-related diagnoses overlap (ischemic heart disease, acute myocardial infarction (AMI), and congestive heart failure ICD-9-CM codes are included within the heart disease category; AMI also is included in the ischemic heart disease diagnosis category).

The denominator used in calculating the rates is the total number of person-years of Part A enrollment. The counts were derived from the enrollment data base maintained for all Medicare enrollees, which includes demographic information such as age, race, sex, and zip code of residence as well as entitlement characteristics such as whether the person is enrolled in a health maintenance organization (HMO). The 1993 overall Medicare population (Part A, non-HMO enrollees) was the standard population for age and sex adjustment. Information to estimate income levels for Medicare Part A enrollees came from the 1990 Census of Population and Housing. The methods for assigning beneficiaries to income quartiles using zip code-level median income is described in Appendix I. The four income quartiles calculated from the 1990 Census file for the total population was the standard population for income adjustment.

In Appendix II, rates for each diagnosis and procedure will be presented for each income quartile, separately for all beneficiaries, white beneficiaries, and black beneficiaries. All of the rates are for the Medicare population 65 years of age or over years of age or over who are not enrolled in an HMO.

As noted previously, the first two analytic questions to be addressed in this study ask the extent to which the rates of selected diagnoses and procedures differ by income level. To address these questions, ratios of the rates of the second, third, and fourth income quartiles to the rate of the first (i.e., highest) income quartile were computed. A ratio of 1.0 indicates that the rate in the given quartile is the same as the rate for the highest income quartile. Ratios greater than or less

than 1.0 indicate an income effect. The patterns of income effects will be examined separately for black beneficiaries and white beneficiaries.

The third analytic issue is the extent to which adjusting for income accounts for black:white differences in rates observed for the selected diagnoses and procedures. To address this issue, the ratio of the age and sex-adjusted rate for the overall black population to the corresponding rate for the white population was computed. A black:white ratio greater than 1.0 indicates that the rate for black beneficiaries is higher than the rate for white beneficiaries, and conversely, a black:white ratio less than 1.0 indicates that the rate for black beneficiaries is lower than the rate for white beneficiaries. Next the ratio of the age, sex, and income-adjusted rates for black beneficiaries and white beneficiaries was computed. If income differences affect the racial differences, then the black:white ratio adjusted for income should be closer to 1.0 than the black:white ratio not adjusted for income. That is, after controlling for the effects of income, the difference in rates between black beneficiaries and white beneficiaries should decrease.

RESULTS

Data in Table II-1 show the Part A denominators used in calculating rates for the 5 diagnoses and 19 procedures. Overall, there were 25 million white beneficiaries (10.1 million males and 14.9 million females) and 2.2 million black beneficiaries (0.8 million males and 1.3 million females) enrolled in Medicare Part A in 1993. Persons in an HMO were excluded. While approximately one quarter of white beneficiaries are in each income category, more than 80 percent of black beneficiaries are within the two lowest income categories.

Data contained in Table II-2 present the age and sex-adjusted hospitalization rates (AR) and risk ratios (RR) for all hospitalizations and for the heart and vascular-related diagnoses. For white beneficiaries, there is a clear income effect for all hospitalizations and for each of the diagnoses; that is, rates rose consistently as income declined. For example, the rate of hospitalization for ischemic heart disease in the second highest income quartile was 16 percent greater (RR=1.16) than the rate in the highest income quartile; the rate in the third quartile was 21 percent greater (RR=1.21) than the rate in the highest quartile; and the rate in the lowest quartile was 28 percent (RR=1.28) greater than the rate in the highest income quartile.

The income effect is much less stable among black beneficiaries for all hospitalizations and for the heart and vascular-related diagnoses. As shown, the rates of hospitalization for black beneficiaries are only modestly different by income category. Nor do the rates rise consistently as income declines.

The black:white ratios for ischemic heart disease (.74) and for AMI (.72) show that hospitalizations for these two conditions are substantially greater among white beneficiaries than among black beneficiaries. In contrast, hospitalizations for congestive heart failure and hypertension are greater among black beneficiaries than among white beneficiaries (black:white ratios of 1.37 and 2.35, respectively). The finding that the hospitalization rate for hypertension is

greater in the black population than the hospitalization rate in the white population is consistent with the well known fact that hypertension is more prevalent among black persons. The black white income-adjusted ratios for these heart disease diagnoses barely changed, indicating that income had little effect in accounting for the black white differences

Table II-3 presents data for four heart and vascular procedures cardiac catheterization, PTCA, CABG, and carotid endarterectomy. The rates for the four procedures among white beneficiaries showed relatively little income effect. Except for carotid endarterectomy where the procedure rates were higher in the lower income quartiles.

The income effect among black beneficiaries was greatest for PTCA and for CABG. The RR in the lowest quartile was only 0.76 for PTCA and only 0.84 for CABG.

The most notable findings are the low black:white ratios for PTCA (0.46), for CABG (0.40), and for carotid endarterectomy (0.31). The income adjustment had the effect of slightly increasing the black:white ratio to 0.51 for PTCA and to 0.43 for CABG; the black:white ratio for carotid endarterectomy was almost unchanged.

Data in Table II-4 show that for white beneficiaries there is little income effect for reduction of fracture of the femur or other arthroplasty of the hip. Nor is there for black beneficiaries much of a consistent pattern for these two procedures.

Because total knee replacement and total hip replacement are considered to be referral sensitive, it might be expected that their rates would go down as income goes down. However, this expectation was true only for hip replacement for white beneficiaries where the risk ratio for the lowest income category was 0.80. With respect to laminectomy, excision of disc, and spinal fusion, rates consistently went down as income went down for black and white beneficiaries.

The black:white ratios for the seven procedures ranged from a low of 0.45 for reduction of fracture of the femur to a high of 0.63 for total knee replacement, indicating that racial differences in procedure rates for all seven procedures are substantial. Adjusting for income differences had relatively little impact on the black:white ratios, except for laminectomy where the black:white ratio increased from 0.51 to 0.59.

Table II-5 provides information for five relatively common procedures in the Medicare population. The one noteworthy procedure with regard to the income effect is cholecystectomy. As income declined, for the white beneficiaries cholecystectomy rates increased.

Except for prostatectomy, the black:white ratios in Table II-5 are all less than 1.0. Income appears to have little effect on differences in rates in the black population compared to the white population.

Data in Table II-6 show procedure rates for surgical procedures identified by McBean and Gornick (1994) as having higher rates for black beneficiaries than procedure rates for white beneficiaries. excisional debridement (removal of tissue, usually related to decubitus ulcers), arteriovenostomy (shunts or cannulae implanted for chronic renal dialysis), and bilateral orchiectomy (removal of both testes, generally performed for cancer in males). Except for arteriovenostomy, there is a substantial income effect for white beneficiaries for the other procedures. For these procedures, as income declined, procedure rates increased. However, there is no consistent pattern for black beneficiaries.

As previously noted, these three procedures were chosen because they had higher rates for black beneficiaries than for white beneficiaries. This is born out by the black:white ratios, that range from 2.45 for bilateral orchiectomy to 5.32 for arteriovenostomy. Income adjustment had little impact.

DISCUSSION

Specific analytic questions were posed at the outset of this study. One question was: Are there differences by income in the rates of the diagnoses and procedures chosen for study? The results suggest that the income effect varies. In many cases, there were only small differences in rates between income categories. However, there was a clear income effect for all of the heart and vascular-related diagnoses among white beneficiaries; rates were notably higher for lower income levels. This effect was much less pronounced and less consistent for black beneficiaries. Income effects of at least moderate size were found for several surgical procedures. For example, rates for carotid endarterectomy were higher for lower income levels for white beneficiaries. This also was true for hospitalization for hypertension. Rates also were higher for lower income levels for cholecystectomy (white beneficiaries), for excisional debridement (white beneficiaries), and for bilateral orchiectomy (white beneficiaries). Rates were lower for lower income levels for PTCA (black beneficiaries), for CABG (black beneficiaries), for laminectomy, for excision of disc, and for spinal fusion.

Another question was: To what extent adjusting for income accounts for observed black:white differences in the rates of the selected diagnoses and procedures? In general, adjusting for income had only modest effects on the black:white ratios.

Note, that the income categories derived from the census data for this study have limitations. The income categories were derived from the median household income calculated for each zip code for households headed by either a white person or a black person 65 years of age or over. The number of black households in some zip codes was small. Thus, income estimates may be unstable in some instances. An additional limitation of this method of categorizing beneficiaries by income is the relatively large size of geographical zip codes and the heterogeneous nature of incomes within these geographic areas. A more sensitive measure would be one based on census tract or block group data (Kreiger, 1992).

This appendix examined the interrelationship between race and income and their effect on surgical procedure rates in the elderly Medicare population. Insurance coverage, one structural characteristic of care, that could account for differences in access to health care, is controlled for, in part, in this population . That is, all enrollees are entitled to Part A coverage for hospital services though they are liable for Medicare copayments and deductibles. However, additional insurance coverage, Medigap, and Medicaid, are not accounted for Moreover, as suggested by Kreiger (1993), other factors may affect procedure ra ... ...cluding the distribution of conditions that require these procedures. Manton (1987), for example, found that for all age groups black persons have a higher prevalence of most chronic conditions and of disability. Specifically, the black elderly have higher rates of hypertension, diabetes, and arthritis than do the white elderly (Furner, 1993). Prior studies have found that black females have a similar or lower rate of breast cancer after 40 years of age compared with white females, but black females are more likely to have breast cancer diagnosed at a later stage in the disease process than are white females (Kreiger, 1990; Eley, 1994). Thus, differences in biological characteristics and health behaviors may be related to the race-specific procedure rates.

The analysis in this appendix has addressed only a part of the array of important components that make up SES. For example, the lifetime earnings of elderly persons, their education, or their occupation have not been considered--all three of which are interrelated with current income levels. Preston (1994) , for example, notes that differences between black persons and white persons in death rates and health status primarily appear to be a manifestation of racial inequality in education and income. Thus, the inclusion in future work of factors such as education may add significantly to the explanatory power of SES status in understanding differences in the utilization of Part A services between black and white Medicare beneficiaries. Moreover, the prevalence of illness needs to be studied in greater detail.

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Diagnosis Category	ICD-9-CM Code
Heart Disease	391-392.0 393-398.99 402-402.9 404-404.9 410-429.9
Ischemic Heart Disease	410-414.9
Acute Myocardial Infarction	410-410.9
Congestive Heart Failure	428-428.9
Hypertension	401-401.9
Surgical Procedure Category	
Appendectomy	47.0
Arteriovenostomy	39.27 39.42 39.93 39.94
Bilateral Orchiectomy	62.41
Cardiac Catheterization	37.21-37.23
Carotid Endarterectomy	38.12
Cholecystectomy	51.21-51.23

Surgical Procedure Category (Continued)	ICD-9-CM Code
Coronary Artery Bypass Graft	DRG 106 DRG 107
Excision of Disc	80.5-80.59
Excisional Debridement	86.22
Hysterectomy	68.4-68.7
Laminectomy	03.09
Other Arthroplasty of the Hip	81.52
Percutaneous Transluminal Coronary Angioplasty	36.01 36.02 36.05
Prostatectomy	60.2-60.6
Reduction of Fracture of the Femur	79.05 79.15 79.25 79.35
Simple and Radical Mastectomy	85.41-85.48
Spinal Fusion	81.0-81.09
Total Hip Replacement	81.51
Total Knee Replacement	81.54

Table II-1

Number and percent of Medicare beneficiaries, by sex, race, and income level of zip code of residence: 1993

Race and Income	Total		Male		Female	
	Number	Percent	Number	Percent	Number	Percent
All Beneficiaries:						
Total	27,174,911	100.0	10,945,622	100.0	16,229,289	100.0
$20,501 and over	6,815,731	25.1	2,776,506	25.4	4,039,225	24.9
$16,301 to $20,500	6,727,631	24.8	2,691,483	24.6	4,036,148	24.9
$13,101 to $16,300	6,568,510	24.2	2,622,477	24.0	3,946,033	24.3
LE $13,100	6,135,872	22.6	2,441,875	22.3	3,693,997	22.8
Unknown	927,167	3.4	413,281	3.8	513,886	3.2
White Beneficiaries:						
Total White	25,013,680	100.0	10,109,853	100.0	14,903,827	100.0
$20,501 and over	6,687,679	26.7	2,725,289	27.0	3,962,390	26.6
$16,301 to $20,500	6,576,201	26.3	2,631,306	26.0	3,944,895	26.5
$13,101 to $16,300	6,295,213	25.2	2,515,019	24.9	3,780,194	25.4
LE $13,100	4,638,478	18.5	1,873,352	18.5	2,765,126	18.6
Unknown	816,109	3.3	364,887	3.6	451,222	3.0
Black Beneficiaries:						
Total Black	2,161,231	100.0	835,769	100.0	1,325,462	100.0
$20,501 and over	128,052	5.9	51,217	6.1	76,835	5.8
$16,301 to $20,500	151,430	7.0	60,177	7.2	91,253	6.9
$13,101 to $16,300	273,297	12.6	107,458	12.9	165,839	12.5
LE $13,100	1,497,394	69.3	568,523	68.0	928,871	70.1
Unknown	111,058	5.1	48,394	5.8	62,664	4.7

NOTES: Counts are of Part A person-years, excluding health maintenance organization enrollment. LE is less than or equal to.

SOURCES: Data derived from the 1993 Medicare Denominator File and the 1990 Census of the Population.

Table II-2

Hospitalization age and sex adjusted rates and risk ratios for all diagnoses combined and for heart and vascular-related diagnoses, for Medicare beneficiaries 65 years of age and over, by race and income: 1993

	All Hospitalizations		Heart Disease		Ischemic Heart Disease		Acute Myocardial Infarction		Congestive Heart Failure		Hypert
	AR	RR	AR	RR	AR	RR	AR	RR	AR	RR	AR
ALL PERSONS:											
Total	332.84		72.58		33.15		11.67		21.53		0.83
$20,501 and over	298.39	1.00	63.74	1.00	29.50	1.00	10.22	1.00	17.40	1.00	0.54
$16,301 to $20,500	326.20	1.09	72.92	1.14	34.13	1.16	11.77	1.15	21.10	1.21	0.69
$13,101 to $16,300	344.45	1.15	76.27	1.20	35.27	1.20	12.63	1.24	22.92	1.32	0.86
LE $13,100	370.70	1.24	79.37	1.25	34.51	1.17	12.42	1.22	25.42	1.46	1.28
WHITE:											
Total White	329.12		72.34		33.82		11.93		20.91		0.75
$20,501 and over	296.93	1.00	63.51	1.00	29.51	1.00	10.23	1.00	17.24	1.00	0.52
$16,301 to $20,500	324.86	1.09	72.81	1.15	34.30	1.16	11.84	1.16	20.91	1.21	0.66
$13,101 to $16,300	342.20	1.15	76.08	1.20	35.59	1.21	12.79	1.25	22.58	1.31	0.83
LE $13,100	369.60	1.24	80.88	1.27	37.71	1.28	13.62	1.33	24.30	1.41	1.10
Income Adjusted	333.40		73.32		34.28		12.12		21.26		0.78
BLACK:											
Total Black	375.56		74.80		25.04		8.57		28.62		1.76
$20,501 and over	375.80	1.00	75.01	1.00	27.95	1.00	9.20	1.00	26.06	1.00	1.70
$16,301 to $20,500	386.56	1.03	77.28	1.03	26.57	0.95	8.22	0.89	28.71	1.10	1.73
$13,101 to $16,300	397.20	1.06	80.32	1.07	27.50	0.98	8.81	0.96	30.53	1.17	1.84
LE $13,100	373.80	0.99	74.26	0.99	24.29	0.87	8.56	0.93	28.82	1.11	1.82
Income Adjusted	383.34		76.72		26.58		8.70		28.53		1.70
BLACK/WHITE RATIO:											
Total	1.14			1.03		0.74		0.72		1.37	
Income Adjusted	1.15			1.05		0.78		0.72		1.34	

Key: AR = rate per 1,000 beneficiaries, adjusted for age and sex; RR = income quartile and Black/White risk ratios

NOTE: LE means less than or equal to.

Sources: Medicare Provider Analysis and Review File and Denominator File. See Technical Note A for ICD-9-CM codes.

Table II-3

Hospitalization adjusted rates and risk ratios for heart and vascular procedures, for Medicare beneficiaries 65 years of age or over, by race and income: 1993

Race and Income	Cardiac Catheterization		Percutaneous Transluminal Coronary Angioplasty		Coronary Artery Bypass Graft		Carotid Endarterectomy	
	AR	RR	AR	RR	AR	RR	AR	RR
All Beneficiaries:								
Total	16.04		5.17		4.54		2.26	
$20,501 and over	15.72	1.00	5.47	1.00	4.53	1.00	2.15	1.00
$16,301 to $20,500	16.72	1.06	5.56	1.02	4.84	1.07	2.47	1.15
$13,101 to $16,300	16.24	1.03	5.21	0.95	4.73	1.04	2.39	1.11
LE $13,100	15.80	1.01	4.50	0.82	4.13	0.91	2.05	0.95
White Beneficiaries:								
Total White	16.41		5.40		4.76		2.39	
$20,501 and over	15.78	1.00	5.52	1.00	4.57	1.00	2.17	1.00
$16,301 to $20,500	16.84	1.07	5.62	1.02	4.90	1.07	2.51	1.16
$13,101 to $16,300	16.42	1.04	5.31	0.96	4.84	1.06	2.47	1.14
LE $13,100	17.14	1.09	5.19	0.94	4.84	1.06	2.46	1.13
Income Adjusted	16.55		5.41		4.79		2.40	
Black Beneficiaries:								
Total Black	11.54		2.48		1.91		0.74	
$20,501 and over	12.26	1.00	3.05	1.00	2.18	1.00	0.76	1.00
$16,301 to $20,500	11.74	0.96	2.84	0.93	2.12	0.97	0.74	0.97
$13,101 to $16,300	12.13	0.99	2.89	0.95	2.16	0.99	0.67	0.88
LE $13,100	11.45	0.93	2.32	0.76	1.84	0.84	0.74	0.97
Income Adjusted	11.90		2.78		2.08		0.73	
Black/White Ratio:								
Total		0.70		0.46		0.40		0.31
Income Adjusted		0.72		0.51		0.43		0.30

Key: AR is the rate per 1,000 beneficiaries, adjusted for age and sex; RR is the income quartile and Black/White risk ratios

NOTES: LE means less than or equal to. See Technical Note A for International Classification of Diseases 9th Revision, Clinical Modification

SOURCES: Data derived from the Medicare Provider Analysis and Review File and the Denominator File.

Table II-4

Hospitalization adjusted rates and risk ratios for orthopedic and back procedures, for Medicare beneficiaries 65 years of age and over, by race and income: 1993

Race and Income	Reduction of Fracture of Femur		Other Arthroplasty of Hip		Total Knee Replacement		Total Hip Replacement		Laminectomy		Excision of Disc		Spinal Fusion	
	AR	RR	AR	RR	AR	RR	AR	RR	AR	RR	AR	RR	AR	RR
All Beneficiaries:														
Total	5.07		2.76		4.23		2.58		1.50		1.31		0.68	
$20,501 and over	5.25	1.00	2.84	1.00	4.02	1.00	2.89	1.00	1.73	1.00	1.45	1.00	0.77	1.00
$16,301 to $20,500	5.21	0.99	2.80	0.99	4.44	1.10	2.73	0.94	1.58	0.91	1.35	0.93	0.72	0.94
$13,101 to $16,300	5.13	0.98	2.82	0.99	4.60	1.14	2.63	0.91	1.49	0.86	1.29	0.89	0.66	0.86
LE $13,100	4.71	0.90	2.60	0.92	3.94	0.98	2.07	0.72	1.18	0.68	1.16	0.80	0.57	0.74
White Beneficiaries:														
Total White	5.30		2.88		4.36		2.69		1.56		1.37		0.70	
$20,501 and over	5.30	1.00	2.87	1.00	4.04	1.00	2.92	1.00	1.74	1.00	1.46	1.00	0.78	1.00
$16,301 to $20,500	5.27	0.99	2.83	0.99	4.48	1.11	2.76	0.95	1.60	0.92	1.36	0.93	0.73	0.94
$13,101 to $16,300	5.23	0.99	2.87	1.00	4.67	1.16	2.68	0.92	1.52	0.87	1.32	0.90	0.67	0.86
LE $13,100	5.48	1.03	3.03	1.06	4.32	1.07	2.33	0.80	1.32	0.76	1.33	0.91	0.62	0.79
Income Adjusted	5.32		2.90		4.38		2.67		1.55		1.37		0.70	
Black Beneficiaries:														
Total Black	2.40		1.33		2.73		1.29		0.80		0.66		0.41	
$20,501 and over	2.49	1.00	1.20	1.00	2.80	1.00	1.27	1.00	1.11	1.00	0.83	1.00	0.49	1.00
$16,301 to $20,500	2.34	0.94	1.26	1.05	2.72	0.97	1.42	1.12	0.85	0.77	0.73	0.88	0.42	0.86
$13,101 to $16,300	2.61	1.05	1.41	1.18	2.85	1.02	1.44	1.13	0.92	0.83	0.71	0.86	0.43	0.88
LE $13,100	2.35	0.94	1.32	1.10	2.72	0.97	1.25	0.98	0.75	0.68	0.64	0.77	0.41	0.84
Income Adjusted	2.45		1.30		2.77		1.35		0.91		0.73		0.44	
Black/White Ratio:														
Total		0.45		0.46		0.63		0.48		0.51		0.48		0.59
Income Adjusted		0.46		0.45		0.63		0.50		0.59		0.53		0.62

Key: AR is the rate per 1,000 beneficiaries, adjusted for age and sex; RR is the income quartile and Black/White risk ratios.

NOTES: LE is less than or equal to. See Technical Note A for International Classification of Diseases 9th Revision, Clinical Modification codes

SOURCES: Data derived from the Medicare Provider Analysis and Review File and the Denominator File

Table II-5

Hospitalization adjusted rates and risk ratios for selected surgical procedures for Medicare beneficiaries 65 years of age or over, by race and income: 1993

	Prostatectomy		Cholecystectomy		Simple/Radical Mastectomy		Hysterectomy		Appendectomy	
	AR	RR	AR	RR	AR	RR	AR	RR	AR	RR
All Beneficiaries:										
Total	17.52		5.34		2.77		3.44		0.46	
$20,501 and over	17.13	1.00	4.68	1.00	2.79	1.00	3.58	1.00	0.48	1.00
$16,301 to $20,500	17.60	1.03	5.37	1.15	2.82	1.01	3.50	0.98	0.46	0.96
$13,101 to $16,300	17.90	1.04	5.72	1.22	2.85	1.02	3.47	0.97	0.46	0.96
LE $13,100	17.83	1.04	5.70	1.22	2.66	0.95	3.23	0.90	0.44	0.92
White Beneficiaries:										
Total White	17.49		5.47		2.81		3.54		0.47	
$20,501 and over	17.07	1.00	4.70	1.00	2.80	1.00	3.60	1.00	0.49	1.00
$16,301 to $20,500	17.57	1.03	5.42	1.15	2.83	1.01	3.53	0.98	0.46	0.94
$13,101 to $16,300	17.80	1.04	5.82	1.24	2.87	1.03	3.52	0.98	0.46	0.94
LE $13,100	17.95	1.05	6.25	1.33	2.76	0.99	3.52	0.98	0.45	0.92
Income Adjusted	17.60		5.55		2.82		3.54		0.47	
Black Beneficiaries:										
Total Black	17.94		3.80		2.33		2.32		0.37	
$20,501 and over	20.42	1.00	3.47	1.00	2.24	1.00	2.27	1.00	0.35	1.00
$16,301 to $20,500	19.09	0.93	3.15	0.91	2.43	1.08	2.11	0.93	0.28	0.80
$13,101 to $16,300	20.30	0.99	3.44	0.99	2.27	1.01	2.21	0.97	0.38	1.09
LE $13,100	17.44	0.85	3.95	1.14	2.36	1.05	2.37	1.04	0.38	1.09
Income Adjusted	19.31		3.50		2.33		2.24		0.35	
Black/White Ratio:										
Total		.03		0.69		0.83		0.66		0.79
Income Adjusted		1.10		0.63		0.83		0.63		0.75

Key: AR is the rate per 1,000 beneficiaries, adjusted for age and sex for cholecystectomy and appendectomy; for other procedures, r sex-specific, adjusted for age, RR is the income quartile and Black/White risk ratios

NOTES: Le means less than or equal to. See Technical Note A for International Classification of Diseases, 9th Revision, Clinical M

SOURCES: Data derived from Medicare Provider Analysis and Review File and the Denominator File

Table II-6

Hospitalization adjusted rates and risk ratios for surgical procedures for which the rates are higher for black persons than for white persons for Medicare beneficiaries 65 years of age or over, by race and income: 1993

Race and Income	Excisional Debridement		Arteriovenostomy		Bilateral Orchiectomy	
	AR	RR	AR	RR	AR	RR
All Beneficiaries:						
Total	3.09		1.13		0.92	
$20,501 and over	2.61	1.00	0.92	1.00	0.72	1.00
$16,301 to $20,500	2.92	1.12	0.95	1.03	0.82	1.14
$13,101 to $16,300	3.02	1.16	1.01	1.10	0.94	1.31
LE $13,100	3.90	1.49	1.70	1.85	1.25	1.74
White Beneficiaries:						
Total White	2.74		0.84		0.83	
$20,501 and over	2.53	1.00	0.85	1.00	0.70	1.00
$16,301 to $20,500	2.80	1.11	0.87	1.02	0.80	1.14
$13,101 to $16,300	2.82	1.11	0.84	0.99	0.90	1.29
LE $13,100	2.89	1.14	0.81	0.95	1.00	1.43
Income Adjusted	2.76		0.84		0.85	
Black Beneficiaries:						
Total Black	7.21		4.47		2.03	
$20,501 and over	7.32	1.00	4.45	1.00	2.15	1.00
$16,301 to $20,500	8.50	1.16	4.32	0.97	1.87	0.87
$13,101 to $16,300	7.94	1.08	4.92	1.11	1.78	0.83
LE $13,100	7.04	0.96	4.47	1.00	2.08	0.97
Income Adjusted	7.70		4.54		1.97	
Black/White Ratio:						
Total		2.63		5.32		2.45
Income Adjusted		2.79		5.39		2.32

Key: AR is the rate per 1,000 beneficiaries, adjusted for age and sex; RR is the income quartile and Black/White risk ratios

NOTES: LE means less than or equal to. See Technical Note A for International Classification of Diseases, 9th Revision, Clinical Modif

SOURCES: Data derived from the Medicare Provider Analysis and Review File and the Denominator File

Appendix III

Effect of Income, Race, and Urbanicity on Access to Selected Changing Procedures and Technologies

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April 1995

Appendix III
Effect of Income, Race, and Urbanicity on Access to Selected Changing Procedures and Technologies

INTRODUCTION

The Health Care Financing Administration (HCFA) has a project that focuses on identifying and monitoring changing procedures under the Medicare fee schedule (MFS). These procedures involve potential change resulting from the use of: new technologies; advancements in existing technologies; and innovations in techniques or applications of existing procedures. The results of this project are used to track and monitor these procedures as they are used by Medicare beneficiaries.

This study analyzes socioeconomic and geographic patterns for several of these procedures. The analysis focuses on the period 1992 through 1993, the first 2 years during which the MFS was in effect. This study is intended to provide an initial assessment of access to these procedures across subgroups of the Medicare population and represents a further analysis of the socioeconomic patterns described in Appendix I.

METHOD

Data

These data come from an inventory of changing procedures and an associated set of HCPCS[1] codes, produced as a result of HCFA's overall effort at monitoring changing procedures under the MFS. The inventory is based on expert opinion and represents an initial step at defining these procedures. It was developed in two stages under contract with ECRI, an independent, nonprofit health care technology assessment organization. Stage one involved the development of a working inventory of technologies and procedures, including literature reviews and automated searches of the 1993 HCPCS file by a team of ECRI technology assessment analysts. The HCPCS file searches were performed to identify codes for the procedures identified in the review process. Stage two included an assessment of the working inventory and was comprised of concurrent external and internal reviews. External medical experts chosen on the basis of their specialty were asked to assess the segment of the working inventory related to their area of clinical expertise. The internal ECRI review group was comprised of biomedical engineers, life and physical scientists, and other staff.

Definitions and Selection Criteria

Health care technology was defined broadly for purposes of stage one as a "device, biotechnology, or pharmaceutical used in procedures involving the prevention, diagnosis, or treatment of disease in humans."

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[1]HCPCS refers to the Health Care Financing Administration Common Procedure Coding System.

The criteria were used as guidelines in the selection of health care procedures for the inventory. The procedure should:

- Possess demonstrated efficacy and Food and Drug Administration approval (if applicable), i.e., the procedure and associated device/pharmaceutical must clearly be beyond the testing and research stage of development.
- Have direct diagnostic or therapeutic application for the Medicare elderly population.
- Possess significant growth potential over the next 3-year period, i.e. have reached a national saturation point no sooner than the next 3 years.
- Have potentially significant cost implications for the Medicare program over the next 3-year period.
- Have the potential capability of being monitored through HCPCS.

An inventory of 92 procedures was developed in the application of these criteria. From this original list, 52 procedures were found to have applicable HCPCS codes.[2] This shortfall in the availability of HCPCS codes may reflect: a time lag in the development of codes for changing technological innovation and/or a lack of specificity in terminology for coding required to identify the use of more innovative devices such as spiral/helical computerized tomography (CT) scanners[3] or the application of high technology devices for such uses as cardiology applications of positron emission tomography (PET).[4]

For this analysis, the inventory was refined further to include only those procedures where HCPCS codes were present throughout the period from 1991 through 1993 to ensure that codes were fully implemented during the 2-year (1992-93) study period. In addition, care was taken to consider only those procedures that were included under the MFS throughout this period.

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[2]Technical descriptions of selected procedures appearing below are based on those contained in the "Inventory of Emerging Technologies" (ECRI #515-014), December 29 1993.

[3]A CT scanner which employs a slip-ring allowing the x-ray tube to continuously rotate around the patient and collect data from a volume of tissue rather than by slice. This has the effect of shortening examination times and decreasing the required amount of contrast agent.

[4]An application of PET that obtains images and provides information on biochemical activity, cellular metabolism, and physiology and pathology of the myocardium using positron-emitting radiopharmaceuticals. This application of technology can characterize the effects of disease on biochemical processes before any anatomic evidence of disease is detected.

Laparoscopic-assisted vaginal hysterectomy, magnetoencephalography, and intraluminal ultrasound are examples of some procedures and associated devices excluded from these criteria

These refinements were intended to help remove possible coding artifacts or payment policy bias effects upon the accuracy of measuring utilization rates. However, these constraints limited the resultant set of procedures as a representation of changing procedures across the health care industry as a whole. These refinements resulted in 22 health care procedures for analysis. The procedures[5] and associated HCPCS codes are shown in Technical Note A.

Some of the procedures contained in Technical Note A have associated codes that appear for the first time in the 1991 version of the Current Procedural Terminology (CPT) -4 (e.g., topographic brain mapping). Other procedures have associated codes that were present several years prior to the 1991 version suggesting potential changes or advancements in the underlying technologies that were not recognized in the CPT-4 coding structure. Examples of these types of procedures include absorptiometry, electrical bone stimulation, and implantable infusion pump use, all of which existed as far back as the 1986 version of CPT-4.

Measures

Procedure rates per 100,000 or per 1,000 Medicare beneficiaries 65 years of age or over years of age or over serve as the primary measures. The numerator component of these rates was built from files extracted from Medicare's 100 percent National Claims History (NCH) Part B Physician/Supplier data base for each of the 2 study years.[6] Data were extracted using the HCPCS codes derived from ECRI's automated searches of the 1993 HCPCS file[7] and represent final action claims transactions for physician procedures.[8] Denominators were derived from the Medicare denominator file and represent counts of all non-health maintenance organization (HMO), Part B-eligible Medicare beneficiaries 65 years of age or over.

The 22 procedures were grouped into clinical and surgical/nonsurgical categories. Technical Notes B and C contain frequencies and 1992-93 percent changes for the 22 procedures classified by these categories.

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[5]Professional judgment involving biomedical engineers and multi disciplinary staff at ECRI was used, as necessary, in assigning HCPCS codes to specific technologies/procedures.

[6]Programming support was provided under contract with Shepard Patterson.

[7]An electronic file of the 1993 HCPCS Manual was created to facilitate the assignment of codes.

[8]A procedure with allowed charges of 0 was not included in the numerator. To eliminate duplicate counting, procedures designated as technical components or associated with assistants at surgery (as designated in the initial HCPCS modifiers) also were excluded from the numerator. Frequencies represent total counts of procedures rendered to white, black, and other Medicare beneficiaries 65 years of age or over.

Income and race are used as indicators of socioeconomic status. Income levels were estimated by imputing race-specific, household, aged median incomes from the zip codes where beneficiaries reside, i.e., white median incomes were assigned to white beneficiaries and black median incomes to black beneficiaries. This process was accomplished by merging a specially prepared file derived from the 1990 census with the procedure-level numerator file for calendar year 1993. The merged observations then were grouped according to quartiles as described in Appendix I. Black-to-white risk ratios also are shown for each of the income quartiles as measures of relative utilization by race.

RESULTS

Most of the procedures (14 out of 22) fall into the nonsurgical category. About one-half of the nonsurgical procedures involve the use of some type of diagnostic device (e.g., topographic brain mapping) and the other one-half involve a therapeutic device (e.g., electrical bone stimulation).[9]

In 1992, the 22 procedures represented about 982,000 paid procedures and $89.5 million in Medicare Part B program expenditures. In 1993, these procedures increased by 8.1 percent to 1.06 million paid procedures with expenditures increasing by only 1.5 percent to $90.9 million (expenditures include the technical components associated with the procedures).

Data in Table III-1 show 1992, 1993, and combined utilization rates[10] per 100,000 aged Medicare beneficiaries for each procedure grouped according to category. The combined rate refers to the 2-year, biannual rate of utilization. As expected in an analysis of changing procedures, some of the procedures identified in the inventory are clearly rare events. Fifteen of the 22 procedures had combined (2-year) utilization rates of less than 100 per 100,000 beneficiaries, 11 procedures of which displayed utilization rates of less than 10 per 100,000 beneficiaries over the combined 2-year period.

In contrast, two types of oncology-related imaging procedures showed relatively high utilization rates for the combined 2-year period. Electronic portal imaging[11] had the highest utilization rate at 2,979 procedures per 100,000 Medicare beneficiaries, rising by 6.0 percent from 1992 to 1993.

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[9]Diagnostic and therapeutic distinctions are not shown in Technical Note B.

[10]Rates used in Table III-1 are unadjusted. The numerators and denominators were computed by combining white, black, and other race categories. Denominators were estimated based on mid-year enrollment counts of non-HMO, Part B eligible beneficiaries 65 years of age or over. The denominator includes beneficiaries with aged and end stage renal disease (ESRD) Medicare entitlements.

[11]A device which verifies that the radiation therapy treatment field equates to the targeted area through rapid, computer-processed, electronic, digital image acquisition.

Another type of oncology-related procedure, computerized treatment planning,[12] showed the second highest rate of 2,329 procedures per 100,000 beneficiaries, but decreased by 4.0 percent between the 2 years.

Other procedures found to possess notably high numbers of services during the 1992-93 period are:

- Absorptiometry--advanced bone mass density measurement techniques useful for testing the effectiveness of osteoporosis treatments.
- Electroencephalogram (EEG) Monitoring--a diagnostic method of quantifying the EEG signal possibly useful in the management of epilepsy.
- Evoked Potential Monitoring--The application of a device for monitoring brain, spinal cord, and nerve response to specific electrical stimuli useful in detecting multiple sclerosis and various sight and hearing disorders.
- Signal Averaging Electrocardiogram (ECG)--a specialized form of ECG thought to be useful in detecting ventricular depolarization that can lead to life-threatening ventricular arrhythmias.
- Electrotherapy for Chronic Pain[13]--The implantation of a spinal cord stimulator that blocks internal pain impulses.

Socioeconomic and geographic utilization patterns for the seven most frequently occurring procedures follow.

Socioeconomic Utilization Patterns

This section of Appendix III describes black/white racial differences in terms of adjusted utilization rates[14] per 1,000 aged Medicare beneficiaries. These data are presented according to estimated income level quartiles for the seven procedures under consideration. As previously

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[12]Based on the use of computer-based devices which: provide physicians with two and three dimensional image capability to evaluate tumor coverage of radiation treatment, and allow for optimization of radiation-dosage in cancer treatment. These devices are used in conjunction with CT scanners, magnetic resonance imaging, PET, and ultrasound scanners.

[13]For ease of reference electrotherapy for chronic pain will be referred to as electrotherapy.

[14]Socioeconomic utilization rates have been adjusted for age and for sex. Adjustments were performed using the direct method of standardization based on combined (black/white) population age-sex percent distributions. Age refers to the patient's age at the time the procedure was performed. Income-adjusted rates were computed using overall black and white percent distributions as the reference population. Denominators for the socioeconomic rates are based on total counts of non-HMO, Part B eligible white and black Medicare beneficiaries 65 years of age or over. Partial-year eligibility was taken into account by computing person-months of eligibility and then annualizing these data.

noted, income levels were approximated by assigning aged, race-specific, household median incomes from the zip code areas in which beneficiaries reside. Risk ratios were calculated using the highest income quartile ($20,501 and over) as the reference utilization rate. Black-to-white risk ratios by income level also are presented as measures of relative utilization.

Data in Table III-2 show the distribution of white and black beneficiaries across the four income quartiles. White beneficiaries are distributed almost equally across the income levels, whereas black beneficiaries are disproportionately represented (73 percent) in the less than or equal to $13,100 quartile.

Table III-3 contains data on adjusted utilization rates per 1,000 Medicare beneficiaries and risk ratios for the seven procedures chosen for study. For white beneficiaries, rates decreased consistently with decreasing income levels for four procedures. Utilization rates for absorptiometry[15] are relatively small and decreased to 42 percent for white beneficiaries living in zip code areas with median incomes less than or equal to $13,100 when compared with the $20,501 and over category.

The risk ratios for evoked potential monitoring procedures were 77 and 83 in the lowest income quartiles. EEG monitoring displayed increased rates as median income levels decreased. For this procedure, the lowest quartile had a rate that was 35 percent higher than the upper-most quartile.

Black beneficiaries showed consistent declines between utilization rates and income quartile levels for only one procedure (electronic portal imaging). However, lower rates are noted in the lowest quartile vis a vis the highest income level for four of the seven procedures. Evoked potential monitoring dropped to 58 percent of the $20,501 and over quartile. Two of the remaining procedures (EEG monitoring and absorptiometry) had equivalent or higher risk ratios in the lowest quartiles. In contrast to the sharp decline shown for white beneficiaries, absorptiometry utilization rates were 14 percent higher in the lowest quartile.

Electrotherapy showed markedly higher comparative rates in the lowest income levels. For white beneficiaries, this rate for the less than or equal to $13,100 income level was found to be over three and two-thirds times (3.65) the rate of the highest income level; for black beneficiaries, comparable rates were found to be about two and one-half times (2.54) as high when comparing the lowest and highest income levels. These patterns may be associated with an elevated prevalence of chronic pain related to physically demanding occupations (and less than average income levels). In addition, chronic pain, if debilitating chronic conditions exit, could become financially stressful and instrumental in further lowering income levels of elderly beneficiaries.

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[15]Absorptiometry (a bone mass measurement technique) showed significantly higher rates for females than for males. Presumptively, this difference is related to the relatively higher rate of osteoporosis in females. The age-adjusted male-to-female risk ratio for absorptiometry was 0.36 in 1993, i.e., for every procedure performed for an aged male beneficiary there were almost three procedures performed for aged female beneficiaries.

Black-to-white risk ratios indicate somewhat lower utilization rates for black beneficiaries in three of the seven procedures, ranging from 74 percent for evoked potential monitoring to 90 percent for EEG monitoring. Signal averaging ECG and absorptiometry rates were 21 percent and 59 percent higher for black beneficiaries than white beneficiaries, respectively. Similarly, black beneficiaries possessed a 38 percent higher probability of receiving electrotherapy for pain than did white beneficiaries.

As expected, income adjustments for white beneficiaries had small effects on the total (non-income-adjusted) utilization rates because of the similarity between the white income and reference population income distributions. Income-adjusted rates for black beneficiaries were higher than were total rates for four of the seven procedures.[16] Income-adjusted rates resulted in increasing the black-to-white risk ratio for computerized treatment planning from 1.03 to 1.11, increasing the black-to-white ratio for signal averaging ECG from 1.21 to 1.36; and 13 increasing the black-to-white risk ratio for electronic portal imaging and evoked potential monitoring from 0.83 to 0.92, and from 0.74 to 0.90, respectively. The opposite effect occurred for absorptiometry where the income adjusted rate was lower than the non-adjusted rate. Here the income-adjusted rate declined from 1.4 to 1.2 per 1,000 beneficiaries. As a result, the black-to-white risk ratios for this procedure decreased from 1.59 to 1.37. A significant lowering effect occurred for electrotherapy where the utilization rate decreased from 5.0 to 3.1 per 1,000 black beneficiaries. This change decreased the black-to-white risk ratio from 1.38 to 0.80.

Geographic Utilization Patterns

Table III-4 contains data on utilization rate [17] patterns across metropolitan and nonmetropolitan areas for the biannual 1992-93 period. Risk ratios compare the overall grouping of metropolitan areas and nonmetropolitan areas. Each specific level of urbanicity (e.g., urbanized adjacent) is compared with the large metropolitan level of urbanicity as the reference.

Two of the procedures had relatively high total metropolitan/nonmetropolitan utilization rates for the biannual period. Computerized treatment planning and electronic portal imaging showed overall rates of 23.8 per 1,000 Medicare beneficiaries and 30.0 per 1,000 Medicare beneficiaries, respectively. Six of the procedures had lower nonmetropolitan than metropolitan rates, with differences ranging widely from 6 percent for electrotherapy to 94 percent for electronic portal imaging.

Most of the non-core urbanicity levels (including metropolitan and nonmetropolitan areas) had lower rates than did the metropolitan core level. In the case of electrotherapy non-core levels, risk ratios ranged from 3 percent to 11 percent of the metropolitan core areas. However, consistent reductions in risk ratios among urbanicity levels are not apparent.

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[16]These technologies included those showing decreased utilization rates in the lowest income quartile (computerized treatment planning, electronic portal imaging, evoked potential monitoring, and signal averaging ECG).

[17]Geographic utilization rates are unadjusted. Refer to footnote 10 for the computational method used for these rate estimates.

DISCUSSION

In addition to monitoring access to care under the MFS, the Secretary has responsibility to consider changes in technology as a factor in formulating Medicare volume performance standard rate recommendations. The analysis presented in Appendix III describes socioeconomic and geographic patterns for a selected group of procedures characterized by underlying changes in technology during the initial 2 years of the implementation of the MFS.

A wide range in utilization rates was found among the procedures identified in the inventory. Over one-half (15) of the procedures in the final inventory had rates of less than 100 per 100,000 Medicare beneficiaries over the 2-year 1992-93 period. In contrast, oncology-related procedures had the highest utilization rates identified in the inventory. These disparities could reflect differences in stages of evolution, displacement effects from competing procedures, coding insensitivities, and other factors.

Although difficult to generalize, these data indicate an association between decreasing income levels and decreasing utilization patterns for some of the procedures studied. Similarly, decreased levels of utilization were found in nonmetropolitan areas when compared with levels of utilization in metropolitan areas. However, notable exceptions were found to these overall patterns.

For the majority of the procedures examined, white beneficiaries exhibited a consistently lower rate of utilization as income quartiles decreased. Diminished rates were noted for most of procedures in the lowest income quartile for both white and black beneficiaries. With respect to geographical patterns most (six) of the procedures examined had lower utilization rates in nonmetropolitan areas than did those in metropolitan areas.

Black-to-white risk ratios showed somewhat diminished utilization rates for black beneficiaries in three of the seven procedures examined; three of the remaining four procedures had significantly opposite risk patterns for black beneficiaries and white beneficiaries. Utilization rates for black beneficiaries (and black-to-white risk ratios) increased for four procedures and decreased for two procedures when income levels were adjusted to the reference population.

Two of the procedures studied displayed unusual socioeconomic and geographic patterns (electrotherapy and EEG monitoring). Both of these procedures showed inverse relationships between income levels and utilization rates for both black and white beneficiaries. The combined black and white risk ratios for these two procedures were found to be 3.39 and 1.27, respectively, when comparing the lowest to the highest income quartiles. As noted, the pattern for electrotherapy may be related to chronic pain precipitated by occupational risk factors such as stressful manual labor. In turn, debilitating chronic conditions may be a factor in lowering income levels.

The metropolitan/nonmetropolitan differences for electrotherapy were very pronounced with the nonmetropolitan area rate at 6 percent of the metropolitan rate. Similar large differences can be

seen when comparing specific metropolitan urbanicity levels with the large metropolitan core level. These large disparities may have been influenced by non-representative practice patterns in a small number of large core metropolitan areas. Virtually, all of these procedures were rendered in large core metropolitan areas and were about 38 percent higher for black beneficiaries than white beneficiaries, suggesting a correlation between race and urbanicity.

Empirically, little is known about changing health care procedure utilization patterns. Prior to the implementation of the Medicare NCH file, used in this analysis, data were limited for purposes of monitoring these utilization patterns or for measuring access to these procedures. These data provide an initial insight into aggregate patterns of utilization along two socioeconomic and geographic dimensions. However, some unexplained issues have been raised regarding differences among specific procedure utilization patterns. These differences could be associated with a variety of unknown influences such as genetic and other biological factors, underlying disease patterns, environmental risks, psychological factors affecting health care utilization, and others. In addition, specific utilization patterns may be affected by perceived efficacy on the part of clinicians and displacement effects from competing procedures.

The procedure inventory used in this analysis is the product of a concentrated body of expert opinion, and, as such, is subject to refinement based on empirical findings. It represents an initial step aimed at monitoring changing procedures relevant to the Medicare population. Future plans call for refining and updating the health care procedure monitoring method and supplementing current results through the application of more rigorous statistical techniques. These studies should provide a more complete and indepth understanding of factors affecting changing procedure utilization patterns under the fee schedule.

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Technical Note A
Selected Changing Procedures and Associated HCPCS Codes
1992–93

Procedure	HCPCS CODE
Absorptiometry	78350, 78351
Autologous Bone Marrow Transplant	38241
Cardiokymography	Q0035
Computerized Treatment Planning	77261, 77262, 77263
Cryoablation of the Prostate	52650
EEG Monitoring	95821, 95955
Electrical Bone Stimulation	20974, 20975
Electronic Portal Imaging	77417
Electrotherapy for Chronic Pain	64550
Evoked Potential Monitoring	92280, 92585
High-Dose Rate Brachytherapy	77781, 77782, 77783, 77784
Hyperthermia	77600, 77605, 77610, 77615, 77620
Implantable Infusion Pumps	36260, 36261
Incontinence Technology	53445
Magnetic Imaging–Cardiac Applications	75552
Multichannel Cochlear Implant	69930
Penile Implants	54400, 54401, 54405
Signal Averaging ECG	93278
Stereotactic Radiosurgery	61793
Topographic Brain Mapping	95961, 95962
Transcatheter Cardiac Ablation	93650
Ventricular Assist Devices	92970, 92971

NOTES: HCPCS is Health Care Financing Administration Common Procedure Coding. System. EEG is electroencephalogram. ECG is electrocardiogram.
SOURCE: Data derived from the "Inventory of Emerging Technologies" (ECRI #515-014), December 29, 1993.

Technical Note B
Selected Changing Procedures, by Category
1992–93

Category	1992	1993	Combined	Percent Change 1992–93
Cardiovascular	34,163	35,536	69,699	4.0
Cardiokymography	74	105	179	41.9
Magnetic Imaging–Cardiac Applications	750	615	1,365	-18.0
Signal Averaging ECG	30,720	31,366	62,086	2.1
Transcatheter Cardiac Ablation	2,271	3,052	5,323	34.4
Ventricular Assist Devices	348	398	746	14.4
Neurology	186,456	250,749	437,205	34.5
EEG Monitoring	28,331	25,084	53,415	-11.5
Evoked Potential Monitoring	92,583	88,131	180,714	-4.8
Electrotherapy for Chronic Pain	65,459	137,449	202,908	110.0
Topographic Brain Mapping	83	85	168	2.4
Oncology	722,316	738,399	1,460,715	2.2
Computerized Treatment Planning	318,991	308,478	627,469	-3.3
Electronic Portal Imaging	388,090	414,694	802,784	6.9
High-Dose Rate Brachytherapy	9,262	10,100	19,362	9.0
Hyperthermia	5,073	4,068	9,141	-19.8
Stereotactic Radiosurgery	900	1,059	1,959	17.7
Urology	7,268	7,328	14,596	0.8
Cryoablation of the Prostate	45	135	180	200.0
Incontinence Technology	1,100	1,323	2,423	20.3
Penile Implants	6,123	5,870	16,238	-4.1
Orthopedics	29,576	27,465	57,041	-7.1
Absorptiometry	28,124	26,464	54,588	-5.9
Electrical Bone Stimulation	1,452	1,001	2,453	-31.1
Other	1,742	1,065	2,807	-38.9
Autologous Bone Marrow Transplant	26	21	47	-19.2
Implantable Infusion Pumps	1,583	932	2,515	-41.1
Multichannel Cochlear Implant	133	112	245	-15.8
Total	981,521	1,060,542	2,042,063	8.1

NOTES: ECG is electrocardiogram. EEG is electroencephalogram.
SOURCE: Data derived from the Medicare Part B Physician/Supplier File.

Technical Note C
Selected Changing Procedures, by Surgical Designation
1992–93

Surgical/Nonsurgical	1992	1993	Combined	Percent Change 1992–93
Surgical	12,181	12,504	24,685	2.7
Autologous Bone Marrow Transplant	26	21	47	-19.2
Cryoablation of the Prostate	45	135	180	200.0
Implantable Infusion Pumps	1,583	932	2,515	-41.1
Incontinence Technology	1,100	1,323	2,423	20.3
Multichannel Cochlear Implant	133	112	245	-15.8
Penile Implants	6,123	5,870	11,993	-4.1
Stereotactic Radiosurgery	900	1,059	1,959	17.7
Transcatheter Cardiac Ablation	2,271	3,052	5,323	34.4
Nonsurgical	969,340	1,048,038	2,017,378	8.1
Absorptiometry	28,124	26,464	54,588	-5.9
Cardiokymography	74	105	179	41.9
Computerized Treatment Planning	318,991	308,478	627,469	-3.3
EEG Monitoring	28,331	25,084	53,415	-11.5
Electrical Bone Stimulation	1,452	1,001	2,453	-31.1
Electronic Portal Imaging	388,090	414,694	802,784	6.9
Electrotherapy for Chronic Pain	65,459	137,449	202,908	110.0
Evoked Potential Monitoring	92,583	88,131	180,714	-4.8
High-Dose Rate Brachytherapy	9,262	10,100	19,362	9.0
Hyperthermia	5,073	4,068	9,141	-19.8
Magnetic Imaging-Cardiac Applications	750	615	1,365	-18.0
Signal Averaging ECG	30,720	31,366	62,086	2.1
Topographic Brain Mapping	83	85	168	2.4
Ventricular Assist Devices	348	398	746	14.4
Total	981,521	1,060,542	2,042,063	8.1

NOTES: EEG is electroencephalogram. ECG is electrocardiogram.
SOURCE: Data derived from the Medicare Part B Physician/Supplier File.

Table III-1

Selected Changing Procedures per 100,000 Medicare Beneficiaries, 1992-93

Procedure	1992	1993	Combined	Percent Change 1992-93
	Rates per 100,000 benefiaries			
Cardiovascular	127.3	131.4	258.7	3.2
Cardiokymography	0.3	0.4	0.7	40.8
Magnetic Imaging-Cardiac Applications	2.8	2.3	5.1	-18.6
Signal Averaging ECG	114.5	116.0	230.4	1.3
Transcatheter Cardiac Ablation	8.5	11.3	19.7	33.4
Ventricular Assist Devices	1.3	1.5	2.8	13.5
Neurology	694.7	927.1	1,621.9	33.5
EEG Monitoring	105.6	92.7	198.3	-12.1
Evoked Potential Monitoring	345.0	325.9	670.8	-5.5
Electrotherapy for Chronic Pain	243.9	508.2	752.1	108.4
Topographic Brain Mapping	0.3	0.3	0.6	1.6
Oncology	2691.3	2730.2	5,421.5	1.4
Computerized Treatment Planning	1188.5	1140.6	2,329.1	-4.0
Electronic Portal Imaging	1446.0	1533.3	2,979.3	6.0
High-Dose Rate Brachytherapy	34.5	37.3	71.9	8.2
Hyperthermia	18.9	15.0	33.9	-20.4
Stereotactic Radiosurgery	3.4	3.9	7.3	16.8
Urology	27.1	27.1	54.2	0.1
Cryoablation of the Prostate	0.2	0.5	0.7	197.7
Incontinence Technology	4.1	4.9	9.0	19.4
Penile Implants	22.8	21.7	44.5	-4.9
Orthopedics	110.2	101.6	211.7	-7.8
Absorptiometry	104.8	97.9	202.6	-6.6
Electrical Bone Stimulation	5.4	3.7	9.1	-31.6
Other	6.5	3.9	10.4	-39.3
Autologous Bone Marrow Transplant	0.1	0.1	0.2	-19.8
Implantable Infusion Pumps	5.9	3.4	9.3	-41.6
Multichannel Cochlear Implant	0.5	0.4	0.9	-16.4
Total	3,657.0	3,921.3	7,578.4	7.2

NOTES: Combined totals may not equal the sum of the individual years because of rounding.

ECG is electrocardiogram. EEG is electroencephalogram.

SOURCES: Data derived from the Medicare Part B Physician/Supplier File and the Denominator File

Table III-2

Distribution of Part B Medicare Beneficiaries by Race and Zip Code Median Income, 1993

Median Income	White		Black		Total	
Quartile	Number	Percent	Number	Percent	Number	Percent
$20,501 and over	6,476,306	27.4	122,372	6.2	6,598,678	25.8
$16,301 to $20,500	6,419,460	27.2	144,076	7.3	6,563,536	25.6
$13,101 to $16,300	6,172,126	26.1	263,362	13.3	6,435,488	25.1
LE $13,100	4,564,366	19.3	1,455,603	73.3	6,019,969	23.5
Total	23,632,258	100.0	1,985,413	100.0	25,617,671	100.0

NOTE: LE is less than or equal to.

SOURCES: Data derived from the U.S. Census, 1990, and the Denominator File

Table III-3

Selected Changing Procedures per 1,000 Medicare Beneficiaries, by Zip Code Median Income, 1993

Median Income and Race	Absorptiometry		Computerized Treatment Planning		EEG Monitoring		Electronic Portal Imaging		Electro-therapy for Chronic Pain		Evoked Potential Monitoring		Signal Averaging ECG	
	AR	RR	AR	RR	AR	RR	AR	RR	AR	RR	AR	RR	AR	RR
All Persons	0.9		11.4		0.9		15.2		3.7		3.1		1.1	
$20,501 and over	1.4	1.00	12.4	1.00	0.8	1.00	17.2	1.00	2.3	1.00	3.5	1.00	1.4	1.00
$16,301 to $20,500	0.8	0.58	11.7	0.94	0.9	1.03	16.4	0.95	2.8	1.20	3.5	0.99	1.2	0.87
$13,101 to $16,300	0.7	0.49	11.1	0.89	1.0	1.15	15.1	0.88	2.4	1.04	2.7	0.78	1.0	0.74
LE $13,100	0.8	0.58	10.4	0.83	1.1	1.27	11.9	0.69	7.7	3.39	2.7	0.78	0.9	0.70
White Beneficiaries														
Total	0.9		11.4		0.9		15.4		3.6		3.2		1.1	
$20,501 and over	1.4	1.00	12.4	1.00	0.8	1.00	17.2	1.00	2.3	1.00	3.5	1.00	1.4	1.00
$16,301 to $20,500	0.8	0.58	11.6	0.94	0.9	1.02	16.4	0.95	2.8	1.22	3.5	1.00	1.2	0.87
$13,101 to $16,300	0.7	0.47	11.1	0.89	1.0	1.15	15.2	0.88	2.3	1.03	2.7	0.77	1.0	0.72
LE $13,100	0.6	0.42	10.1	0.81	1.1	1.35	11.8	0.69	8.3	3.65	2.9	0.83	0.8	0.62
Income Adjusted	0.9		11.4		0.9		15.1		3.9		3.2		1.1	
Black Beneficiaries														
Total	1.4		11.7		0.8		12.8		5.0		2.4		1.3	
$20,501 and over	1.3	1.00	12.6	1.00	0.8	1.00	16.0	1.00	2.4	1.00	3.6	1.00	1.5	1.00
$16,301 to $20,500	0.7	0.49	13.9	1.10	1.0	1.19	14.5	0.91	1.2	0.52	2.4	0.67	1.3	0.89
$13,101 to $16,300	1.3	0.98	12.9	1.03	0.8	0.98	13.3	0.84	3.4	1.44	3.3	0.90	1.8	1.20
LE $13,100	1.5	1.14	11.2	0.89	0.8	1.01	12.3	0.77	6.0	2.54	2.1	0.58	1.3	0.86
Income Adjusted	1.2		12.6		0.8		13.8		3.1		2.9		1.5	
Black:White Ratios														
Total		1.59		1.03		0.90		0.83		1.38		0.74		1.21
Income Adjusted		1.37		1.11		0.87		0.92		0.80		0.90		1.36

Key: AR is Adjusted for age and sex; RR is Quartile and black:white risk ratios.

NOTES: EEG is electroencephalogram. ECG is electrocardiogram. LE is less than or equal to.

SOURCES: Data derived from the Medicare Part B Physician/Supplier File and the Denominator File.

Table III-4

Changing Procedures per 1,000 Medicare Beneficiaries, by Urbanicity Level, 1992-93

Urbanicity Level	Absorptiometry		Computerized Treatment Planning		EEG Monitoring		Electronic Portal Imaging		Electro--therapy for Chronic Pain		Evoked Potential Monitoring		Signal Averaging ECG	
	Rate	RR	Rate	RR	Rate	RR	Rate	RR	Rate	RR	Rate	RR	Rate	RR
Metropolitan Areas	2.3		24.5		2.0		30.5		7.5		7.5		2.5	
Large Metro. Core	2.5	1.00	25.2	1.00	2.2	1.00	29.5	1.00	13.5	1.00	8.8	1.00	3.1	1.00
Large Metro. Fringe	2.2	0.88	22.6	0.90	2.9	1.32	43.4	1.47	0.4	0.03	4.4	0.50	1.7	0.56
Medium Metropolitan	2.3	0.92	23.8	0.95	1.7	0.77	30.1	1.02	1.4	0.11	6.2	0.71	2.1	0.68
Lesser Metropolitan	1.6	0.64	23.7	0.94	1.5	0.69	30.1	1.02	0.8	0.06	6.3	0.72	1.3	0.43
Nonmetropolitan Areas	1.2		21.8		2.0		28.7		0.5		4.4		1.8	
Urbanized Adjacent	1.1	0.44	21.7	0.86	1.5	0.66	38.7	1.31	0.5	0.04	5.9	0.68	1.8	0.57
Urbanized Nonadjacent	1.2	0.50	34.3	1.36	1.3	0.61	20.4	0.69	0.7	0.05	5.3	0.60	2.2	0.71
Less Urban Adjacent	1.4	0.55	21.1	0.84	2.4	1.10	29.1	0.99	0.4	0.03	4.0	0.46	1.6	0.52
Less Urban Nonadjacent	1.0	0.41	19.0	0.75	2.2	0.98	25.8	0.88	0.4	0.03	3.9	0.45	1.7	0.55
Thinly Pop. Adjacent	1.1	0.43	21.0	0.83	2.1	0.97	30.6	1.04	0.5	0.03	3.9	0.45	2.3	0.73
Thinly Pop. Nonadjacent	1.0	0.41	18.1	0.72	2.2	1.00	24.0	0.81	0.4	0.03	3.4	0.39	2.0	0.64
Total	2.0		23.8		2.0		30.0		5.7		6.7		2.3	
Nonmetro:Metro Ratios		0.51		0.89		1.02		0.94		0.06		0.59		0.71

Key: RR is Urbanicity and nonmetropolitan:metropolitan risk ratios.

NOTES: EEG is electroencephalogram. ECG is electrocardiogram. Metro. is metropolitan.

Pop. is populated.

SOURCES: Data derived from the Medicare Part B Physician/Supplier File and the Denominator File.

Appendix IV

Medicare Fee Schedule's Impacts on the Distributions of Allowed Charges

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Appendix IV

Medicare Fee Schedule's Impacts on the Distributions of Allowed Charges

Introduction

Data contained in Appendix IV are used to review selected trends that emerged during the implementation and evolution of the Medicare fee schedule (MFS) for physician services. It presents summary data from the Health Care Financing Administration's (HCFA) National Claims History (NCH) file that were designed to monitor changes in several aspects of the distributions of physicians' allowed charges since the introduction of the MFS. This appendix also presents some trends in beneficiary usage of various types of physicians and suppliers and of various care sites.

Methods

NCH-allowed charge totals provide highly aggregated measures for calendar years 1991, 1992, and 1993 and for preliminary 1994 calendar year physician-billed services for which distributions might change. One hundred percent of the available data were used to examine types of services provided, specialties, States and care sites. Annual user rates for specialties and for care sites for 1990 through 1993 were derived from the annual claims of a 5-percent sample of fee-for-service enrollees. In addition, the range in payment amounts for the highest and for the lowest localities were reviewed for 12 services.

Background

Calendar year 1994 was the next-to-last year of the transition to a national MFS for physician services. The Medicare fees in 1994 were a composite of 33 percent of the 1994 national MFS amount in a locality plus 67 percent of the 1993 payment rate in a locality. In 1995, the composite rate became 50 percent of the 1995 national MFS amount plus 50 percent of the 1994 payment amount in a locality. As of 1996, however, all payments will be based on the national MFS.

The past two Reports to Congress (RTC) on access presented additional evidence that the MFS was achieving its purposes. Payments for visits and consultations increased, while payments for most surgery decreased. The Geographic Practice Cost Index tended to make differences between payment areas smaller. The proportion of total allowed charges for primary care and medical specialties increased markedly. Physician acceptance of assignment continued to increase, as did the number and percentage of participating physicians who accept assignment for all Medicare patients in their practice. Comparing 1991 to 1992, there was a downturn in the rate of growth of Medicare spending for physician services, while the growth rate for 1993 was fairly modest relative to historic levels. But, there were no significant declines in access to or in the use

of physician services by Medicare beneficiaries generally or among the most vulnerable populations that are being monitored. These findings appear to be consistent with many reports from the private sector that the rates of increase in health care spending have abated in recent years with no obvious reduction in patient access or in patient satisfaction measures.

HCFA's monitoring strategy has been described at some length in previous reports. HCFA's National Claims History File (NCH) data system has enabled the monitoring of overall changes and changes in representative samples of Medicare beneficiaries and of physicians. HCFA is monitoring changes in hospital inpatient utilization, especially for ambulatory care sensitive conditions and for referral sensitive procedures, as well as the use of the flu vaccine benefit that began in 1993, and the mammography benefit that began in 1991. HCFA is also conducting the Medicare Current Beneficiary Survey of a sample of Medicare beneficiaries and analyzing the National Health Interview Surveys to ascertain changes in access matters.

HCFA has provided the Physician Payment Review Commission (PPRC) with data for much of its collateral monitoring activity and has funded health services research to obtain broad and objective analysis of the access issue both before and after the implementation of the MFS. The Agency has made its data files available to the American Medical Association's (AMA) Center for Health Policy Research and to other researchers to enable them to validate the research findings. HCFA monitors the health service research literature on studies of access issues, especially those studies dealing with the Medicare population. The literature includes surveys and studies sponsored by the Agency for Health Care Policy and Research or by private entities such as the Robert Wood Johnson Foundation.

Expectations for 1994

For 1994, the MFS conversion factor updates increased 10.0 percent for surgical services, 7.9 percent for primary care services and 5.3 percent for other nonsurgical services. These updates reflect the reductions enacted by Congress in the Omnibus Budget Reconciliation Act of 1993 (OBRA 1993), Public Law 103-66. However, for 1992 and 1993, the updates were based on performance under the Medicare Volume Performance Standards (MVPS). Under the MVPS, a service is considered surgical if it is billed as a surgery type of service and is performed by surgical specialists at least 50 percent of the time. This definition extends to anesthesia services associated with surgeries and to assistants at surgery. The specialties that are considered surgical include General Surgeon, Neurosurgeon, Obstetrician/Gynecologist, Ophthalmologist, Oral Surgeon, Orthopedic Surgeon, Otorhinolaryngologist, Plastic and Reconstructive Surgeon, Colorectal Surgeon, Thoracic Surgeon, Podiatrist, Dermatologist, Hand Surgeon, Multispecialty Clinic, Cardiac Surgeon Maxillo-Facial Surgeon, Surgical Oncologist and Vascular Surgeon.

Primary care services include the AMA's Current Procedural Terminology (CPT) defined codes representing office visits; home visits, skilled nursing, intermediate care and long term care facility visits, nursing home, boarding home, domiciliary, or custodial visits; emergency department visits; and intermediate and comprehensive office visits for eye examinations and treatments. All other

physician services are in the other nonsurgical services category and include services such as diagnostic ex-rays, pathology examinations and diagnostic surgical procedures.

Calendar year 1994 was the first year in which primary care services had a larger MFS update than other nonsurgical services. In fiscal year (FY) 1994, a separate MVPS was instituted for primary care services. The MVPS rates of increase targets for FY 1994 were 9.1 percent for surgical services, 10.5 percent for primary care services, and 5.2 percent for other nonsurgical services.

The comparatively larger 1994 conversion factor increase for surgical services reflected FY 1992 MVPS performance. Were the MFS not in transition, one would expect surgeons' 1994 Medicare revenues to increase faster than those of other physicians. However, as noted earlier, 1994 payment rates are a composite of 33 percent of the 1994 MFS amount and 67 percent of the 1993 payment amount in the locality. In general, the transition formula would have lowered 1994 payment amounts for most surgery had there been no update. In addition, for several hundred surgical procedures, there was a reduction in the 1994 practice expense portion of their relative values required by OBRA 1993. Refinements to the relative work portion of the relative value scale had mixed effects and had an overall impact of -0.1 percent. For most specialties, this impact was between plus or minus 0.2 percent, but for Thoracic Surgeons, it was +1.6 percent for 1994 and is projected to be 2.1 percent by 1996 when the full fee schedule is in effect.

There also was an additional across-the-board conversion factor reduction of 0.7 percent resulting from the OBRA 1993 requirement to resume separate payments for interpretation of electrocardiograms (ECG). These payments would mostly benefit medical specialists like cardiologists and internists, but would have a slightly negative effect on all other physician service payments.

The establishment of a separate MVPS for primary care services provided an opportunity for primary care physicians and medical specialists who were not procedure-oriented to have future updates based mainly on their own performance. While there would be no direct influence on their 1994 Medicare payment rates, it is possible that without a separate MVPS target, physicians and specialists might become less willing to see Medicare patients in primary care settings. Similarly, medical specialists might become less inclined to provide primary care, but more inclined to increase referral services (i.e., consultation), to Medicare beneficiaries. Thus, the behavioral responses of physicians to changes in MVPS remain an important research topic.

In December 1994, an announcement was made that the MFS updates for 1995 would be 12.2 percent for surgical, 7.9 percent for primary care, and 5.2 percent for other nonsurgical services. The differences in the update percentages were the result of performance under the FY 1993 MVPS.

Results

Previous reports in this series have shown that several trends have developed or intensified since the MFS was introduced in 1992. These trends include

- No decline in beneficiary access to or in receipt of physician services has been found in HCFA's comprehensive monitoring efforts or in those conducted by the PPRC.
- Increases in physician participation and acceptance of assignment in nearly all physician specialties.
- Decreases in beneficiary liabilities for the extra-billed amounts.
- Increases in the share of total Medicare-allowed charges for services billed by physicians for primary care services and for the specialties who performed them.
- Changes in the distribution of Medicare-allowed charges were in general in accordance with the forecasts and with apparent congressional intent to narrow the geographic disparities that previously existed.
- More of the allowed charges for physician services were for care in physician offices, as the share for hospital-sited services fell.
- The increase in allowed charges for physician services was noticeably slower than the increases for other Part B services that are not reimbursed by the MFS.

Final 1993-Allowed Charge Distributions

Final data on 1993 allowed charges for services to fee-for-service enrollees confirmed the trends and patterns of change noted previously in this appendix and in the preliminary data presented in the 1994 Report to Congress (RTC). Table IV-1 shows these data for 1991, 1992, and 1993 at the national level by broad types of service groupings. Total-allowed charges increased by 5.0 percent in 1993, with medical visits and consultation allowances rising by over 9.3 percent, test allowances rising by about 2.0 percent, and allowances for procedures falling by over 2.4 percent. The 1993 increase for all other (primarily, nonphysician) services was 13.5 percent.

Trends by Physician Specialty Category

Table IV-2 displays data by type of service and by physician specialty category. Allowed charges for physician services increased from $34.9 billion in 1992 to $35.8 billion in 1993 or about 3 percent, while those for nonphysician services increased from $9.1 billion in 1992 to $20.3 billion or more than 13 percent. In 1993, the physician specialty categories that had the largest increases in allowed charges were primary care specialties, $3.8 billion (or 11 percent) and

medical specialties, $13 5 billion (or 6 5 percent) Table IV-3 shows that the preliminary 1994 allowed charges for physician-billed services of $36 3 billion already has surpassed the final 1993 amount of $35 8 billion. The proportions of allowed charges in 1994 for various specialty categories showed little change from the proportions in 1993 The preliminary data for 1994 suggest that by and large the trends noted in the 1993 and 1994 RTC have continued

Medicare Part B Fee-for-service Enrollment for 1993

Changes in the numbers of Medicare Part B enrollees in the fee-for-service sector influence the changes in the NCH-allowed charge totals. While total Medicare Part B enrollment rose by 2 percent (about 668,000 persons) between June 30, 1992, and June 30, 1993, the comparable net increase for the fee-for-service part of Part B enrollment was 1 4 percent or about 442,000 persons.

During 1993, Medicare's Part B fee-for-service enrollment declined in the District of Columbia and in Arizona, California, Oregon, and Rhode Island, and increased by less than 1 percentage point in Illinois, New York, North Dakota and Utah. Table IV-4 provides data on changes from 1991 to 1992 and from 1992 to 1993 in fee-for-service enrollment and in allowed charges for fee-for-service physician billings by state and region. NCH-allowed charge totals are influenced by interactions of several factors besides enrollment changes. These factors include the State's historic charge levels, the MFS transition formula, changes in physician supply, changes in patient health service needs or preferences, and changes in accessibility.

In 1993, total-allowed charges from fee-for-service physician billings fell in Arizona, North Dakota, Oregon and Washington and rose by less than 1 percent in Arkansas, California, Missouri, and South Dakota. In Arizona and Washington, allowed charges declined in both 1992 and 1993; whereas, in Arkansas and California allowed charges fell in 1992 and virtually had no increase in 1993. There also were declines in the number of Medicare fee-for-service enrollees in three (Arizona, California, and Oregon) of the eight States in which allowed charges for physician services fell or rose by less than 1 percent.

Trends in Allowed Charge Distributions among Regions and States

Table IV-5 provides the final allowed charges for physician services by region and by State for 1991, 1992, and 1993 and shows the preliminary yearly amounts for 1993 and 1994. In 1993, there were above average increases in final allowed charge data for physician-billed services for most States in the New England, Middle Atlantic, and South Atlantic regions. Preliminary 1994 data for the South Atlantic and West South Central regions had the most increase. Also, preliminary 1994 amounts were larger than the comparable 1993 figures in all States.

Trends in Geographic Payment Differences

One of the expectations for Medicare physician payment reform was that geographic differences in payments be reduced. A review was made of the Medicare allowance differences among the

Medicare payment localities for six surgical procedures and six visit or consultation services Table IV-6 summarizes these payment ranges for the Adjusted Historic Payment Basis and the MFS annual transition amounts through 1995 It shows that for the most reviewed services and procedures the geographic differences in payment amounts dropped significantly in 1992 and have continued to decline through 1995 For example, the range in payment rates for cataract removal with intraocular lens implant (code 66984) declined from $589 in 1992 to $484 in 1995.

Trends in Medicare Part B Fee-for-Service Beneficiary Usage of Various Types of Physicians and Suppliers, 1990 through 1993

When the MFS was enacted, there were concerns that Medicare beneficiaries might have reduced access to physician services. There have been some anecdotes reported to the AARP, and to the PPRC, and by individual letter-writers showing that some beneficiaries have experienced access problems. The instances cited often involved persons who have recently moved into a new community and have experienced difficulty in establishing a satisfactory relationship with providers in the health care system. It is likely, however, that incidences like these began long before the enactment of the MFS.

Although Medicare-managed care plans guarantee their enrollees will have access to needed care, there have never been similar assurances for the fee-for-service sector of Part B. Although a majority of physicians and suppliers have agreed to participate in Medicare Part B by accepting Medicare allowances as full payment and over 90 percent of all Part B claims and payments involve similar agreements, there is no statutory assurance that physicians or suppliers will accept all patients who might wish to receive their services.

Table IV-7, presents a limited overview of the extent to which Medicare Part B fee-for-service enrollees obtained care from various specialties or types of physicians and suppliers from 1990 through 1993. In general, these data reinforce earlier findings that there has not been a systematic reduction in Medicare beneficiary access to needed services since the MFS was implemented. There are, however, some important limitations to keep in mind when reviewing Table IV-7. For example, figures are based on estimates from the fee-for-service claims of a 5-percent sample of Medicare enrollees. Also, the vast majorities of people for each year's sample are the same persons. Because these data are estimated from a sample of beneficiaries, they may differ from the figures that would have been obtained had these statistics been tabulated from the entire universe of beneficiaries.

As noted in the 1994 RTC, during the period from 1990 to 1992, HCFA's systems for identifying individual physicians and suppliers as well as coding their specialties underwent significant change. The Unique Physician Identification Number (UPIN) registry was established. The specialty coding system was revised and its categories were expanded. Some physicians may change their specialty over time or may simultaneously report more than one specialty. For example, General Practice physicians often evolve into the Family Practice specialty or General Internal Medicine specialists may move into Cardiology.

Table IV-7 shows that the proportion of sampled fee-for- service Part B beneficiaries receiving at least one covered service (i e the user rate) rose from about 90 persons of each 100 enrollees in 1990, to about 96 per 100 enrollees in 1993 For nearly all specialties, the proportion of users was higher in 1993 than the proportion in 1990

Between 1991 and 1993, the overall use rate rose slightly, from 94 users per 100 enrollees to about 96 users per 100 enrollees The figures suggest [illegible] overall change in the pattern of specialty usage since the MFS was implemented. For instance, an apparent decline in the proportion using General Practitioners was roughly matched by the increase in the rate of users of Family Practice specialists. Likewise, the decline in users of Internal Medicine was offset by user rates for the newer specialty code categories such as Hematology/Oncology, Rheumatology, Endocrinology, Medical Oncology or Geriatrics. The decline use of Cardiology specialists was partly offset by the use rate for Invasive Radiology. Appendix Iof the 1994 RTC provides more detailed information on the changes in physician specialty designations that occurred during 1992 as a result of implementing the UPIN registry system. The declined use for cardiology coincides with the change to bundling payment for interpretation of EKGs with payment for visits that occurred in 1992 and continued through 1993. (Separate payment for interpretation of EKGs resumed in 1994.)

Trends in Medicare Part B 'Fee-for-service' Beneficiary Usage of Various Places of Service, 1990 through 1993

Table IV-8 provides data on the percent of enrollees in a 5-percent sample of Medicare Part B fee-for-service enrollees who received some covered care in various settings, in the years 1990 through 1993. Because these data are from a sample, the percentages may differ from those that would be obtained had the universe of beneficiaries been analyzed.

These data suggest little material change in the proportion of beneficiaries receiving care in various places over the period when the MFS was implemented. Most of the year-to-year changes for various places appear to be less than a percentage point. The only places of service that seem to have a declining user rate are hospital outpatient departments and hospital inpatient facilities. The apparent decline for hospital outpatient departments may be a data artifact resulting from the separate encoding of hospital emergency room claims that began in 1992. The decline in usage of inpatient facilities may be a continuation of a long-term trend of declining use of hospital inpatient facilities.

From 1991 through 1993, there was a small (1 percentage point) increase in the user rate for office services and a slightly larger increase for home services. The allowed charge data shown earlier in Table IV-8 suggest that the increase in the home user rate was primarily for nonphysician services. The trend in user rates for ambulance cannot be determined from Table IV-8, but the type of service usage data shown in Table IV-7 indicate that the user rate for ambulance services has been rising. The user rates for services at independent laboratory, skilled nursing facility, nursing home and ambulatory surgical center virtually were unchanged from 1991 through 1993.

Allowed Charge Distributions by Places of Service

Table iV-9 shows how the amounts and proportions of allowed charges for physician services according to places of service have changed since the MFS was implemented. The greatest increase occurred in physician office services, the greatest decline occurred in hospital inpatient sites. There also has been steady growth in the proportions of physician services to beneficiaries in nursing homes and in ambulatory surgical centers. These trends for more office care and nursing home care may reflect MFS incentives for providing increased primary care.

Summary

Continued analyses of changes in the distributions of Medicare Part B-allowed charges for physician services suggest that the implementation of the MFS has resulted in the kinds of changes that were expected. An analysis of the 1990 through 1993 proportions of Medicare Part B beneficiaries who use various types of physicians or suppliers in various settings indicates little if any negative impact of the MFS on Medicare beneficiaries. The MFS continued to enable beneficiaries to have access to the kinds of physician and supplier services they received before the MFS was implemented.

End Notes for Appendix IV

Tables IV-3, IV-5, and IV-9

The tables for Appendix IV were prepared from the same data sources and methods used in preparing the tables for Appendix I of the 1994 Report to Congress (RTC).

In assembling data for Tables IV-3, IV-5, and IV-9 in this appendix, the Health Care Financing Administration (HCFA) observed a possible anomaly involving the Durable Medical Equipment Regional Carrier (DMERC) claims for 1993 that is becoming especially evident in preliminary 1994 data. The apparent problem is by DMERCs an unexpectedly high proportion of claims that were coded as being billed by Unknown Physician Specialty (HCFA Specialty Code 99). These bills from these regional carriers accounted for $322 million of the national total of nearly $331 million in allowed charges for such physicians from all carriers for all types of Part B services. In contrast, in 1993, the DMERCs reported almost $3.0 million for this physician specialty code. In other words, while the regular carrier's usage of code 99 was virtually unchanged between 1993 and preliminary 1994, DMERC's usage increased by $319 million. This $319 million increase in DMERC's allowed charges for specialty code 99 is equivalent to almost three-quarters of the entire $431 million increase between 1993 and preliminary 1994 in allowed charges for all types of physician specialties and for all types of services shown in Tables IV-3, IV-5, and IV-9.

In Table IV-3, the anomaly affects the Clinics/Unknown specialty category, where the $319 million from DMERCs is equivalent to 65 percent of the $491 million allowed charge increase between 1993 and preliminary 1994.

In Table IV-5, the $319 million anomaly is somewhat higher than the $312 million-allowed charge increase shown in the combined Railroad Retirement Board and DMERC row. It does not affect the figures for regions or for States.

Most of the claims submitted by the DMERCs were for durable medical equipment for home use. This increase of $319 million in allowed charges for physician specialty code 99 from the DMERC's is somewhat higher than the $315 million increase between 1993 and preliminary 1994 in allowed charges for physician services with place of service Home that is shown in Table IV-9.

Because this possible anomaly is confined to the DMERCs, HCFA believes it does not materially affect the other tables in which no preliminary 1994 data are presented.

Table IV-6: Geographic Differences in Medicare Payment Rates for Selected Procedures, Adjusted Historic Payment Basis through 1995

Table IV-6 to illustrates the general narrowing in the range of payments among geographic areas that occurred during transition to the MFS It presents the Adjusted Historic Payment Basis (AHPB) average amounts used to initiate the transition to the MFS and the transition MFS payment rates for 1992 through 1995 for six selected surgical procedures and for six selected medical visits or consultations.

The AHPB is the 1991 Historic Payment Basis and was computed by each Medicare carrier at the locality level and adjusted for the 1992 update factor and was reduced to account for the expected cost of statutory MFS transition provisions. In the few instances where no AHPB was available for a service or procedure, the 1992 payment rates were set at the full fee schedule amount. For further description, refer to the November 25, 1991 *Federal Register* final rule for the MFS.

Geographic Payment Variation Trends for Selected Procedures

Eleven of the 12 illustrated procedures that range in payments among geographic areas narrowed between the AHPB and 1992, the first MFS transition year. The exception was cataract surgery (CPT code 66984). The AHPB range in payment for this code was the smallest among the selected procedures. The lowest MFS payment rates for this service were in a locality that had no AHPB. Since 1992, the range in payments for cataract surgery has steadily decreased.

The range of payments for three of six illustrated surgical procedures--pacemaker insertion, appendectomy and gallbladder removal--steadily declined through 1995. In 1995, this trend for transurethral prostatectomy (CPT code 52601) was interrupted. The range in payments for hip replacement increased between 1992 and 1995. The range in payments steadily narrowed for three of the four of the illustrated visit services--new patient office visit, initial hospital visit, and subsequent hospital visit, and for both consultation service codes. But in 1995, the range for established patient office visit increased.

The first update of the geographic adjustment factors began a 2-year transitional implementation phase in 1995. Changes in the range of payments also might occur as results from refinements or adjustments in either work relative values or practice expense relative values, or from consolidation of payment localities. In 1996, the geographic variation in MFS payments will be based solely on the geographic adjustment factors. These factors are geographic practice cost indexes for work, practice expense, and malpractice expense that adjust each procedure's relative value components for work, practice expense and malpractice expense.

Pre-MFS Payment and Geographic Payment Variation Patterns

Highest Areas The highest payment areas indicated in the AHPB were Queens, New York for hip replacement; Poughkeepsie, New York for pacemaker insertion; Manhattan for appendectomy, gallbladder removal and established patient office visit; Los Angeles, California area eight for prostatectomy, cataract surgery, initial hospital visit, office consultation and inpatient consultation; Los Angeles, California area six new patient office visit; and Alaska for initial hospital visit.

Lowest Areas The lowest payment areas in the AHPB varied by procedure or service Milwaukee, Wisconsin had the lowest amount for hip replacement, Utah for pacemaker insertion. Alexandria, Louisiana for appendectomy; Rural Georgia for gallbladder surgery, Small Virginia Towns for prostatectomy, Southwest Wisconsin for new patient office visit. Central Maine for subsequent hospital visit, and Puerto Rico for cataract removal, initial hospital visit, office consultation and inpatient consultation.

Geographic Payment Variation Patterns During Transition

Highest Payment Rates Throughout the 1992-95 MFS transition, the highest payment areas for hip replacement, pacemaker insertion, appendectomy, gallbladder removal and established patient office visit were in Manhattan, Long Island or Poughkeepsie, New York. Since 1994, these also were the highest payment areas for prostatectomy and cataract surgery. Previously, Los Angeles, California, contained the highest payment areas for these services. In 1995, Manhattan became the highest payment area of new patient office visit, office consultation and inpatient consultation. Los Angeles, California, had previously been the highest area for new patient office visit and for office consultation. Similarly, during 1992 and 1993, Los Angeles, California, was the highest area of initial hospital visit and for inpatient consultation. In 1994, Queens, New York, became the highest payment area for initial consultations. For initial hospital visit, Alaska became the highest area for these visits in 1994 and San Francisco, California, became the highest in 1995. Throughout this transition, Alaska has been the high area for subsequent hospital visit. In 1996, when the MFS transition is complete, Manhattan, New York, will be the highest payment area for all MFS services.

Lowest Payment Rates Puerto Rico, which will become the lowest payment area for all services in 1996, was the lowest area for 10 of the 12 illustrated services by 1995. The 1995 low for pacemaker insertion was in the Jefferson City, Missouri area although Central Wisconsin has been previously. The low area for cataract surgery from 1992 to 1995 was Southwest or Central Wisconsin. The lowest 1992 payments for hip replacement surgery were in South Central, Iowa. The lowest 1992 payment for appendectomy was in Alexandria, Louisiana, while the lowest payments for Rural Indiana occurred in 1993 and 1994. The lowest payment area in 1992 for gallbladder removal was in Northwest Wisconsin, and the lowest payment area for Rural Georgia occurred in 1993 and 1994. The lowest payments for prostatectomy were in Small Virginia Towns in 1992 and 1993. The lowest payment area for new patient office visit was Southwest Wisconsin occurred in 1992 and 1993, while Rural Mississippi was the low area in 1994. The lowest payment for established patient office visit was in Waco, Texas in 1992 and 1993, while West Rural Texas was lowest in 1994. Puerto Rico was the lowest payment area for initial hospital visit from 1993 through 1995. Central Maine has the lowest payment area for subsequent hospital visit from 1992 to 1994.

No effort was made to establish national averages for procedures from these data. Some of the payment localities apply to entire States, while others apply to portions of counties. Some substate payment localities essentially have rural/urban contexts, while in other States, localities appear to be directional. It should be noted that under the fee schedule, payment rates are established every year for each procedure regardless of whether the procedure is or was ever performed in that area.

Table IV-1

Medicare Part B Fee-for-Service Claims: Allowed Charges by Type of Service, 1991, 1992, and 1993

Year	Total	Medical Visits and Consultations	Surgery, Rad. Ther., Anesthesia, & Assistants	X-ray and Lab Tests	All Other
			Allowed charges (in millions)		
1993	$46,124	$16,311	$12,984	$8,962	$7,868
1992	43,942	14,926	13,301	8,785	6,930
1991	42,915	13,885	14,116	8,727	6,186
			Percent Changes		
1992-93	5.0	9.3	-2.4	2.0	13.5
1991-92	2.4	7.5	-5.8	0.7	12.0
			Adjusted for changed population		
1992-93	3.5	7.8	-3.8	0.6	12.0
1991-92	0.7	5.7	-7.3	-1.0	10.2

NOTE: HCFA is Health Care Financing Administration.

SOURCE: HCFA Part B Monitoring System: Allowed charges derived from HCFA National Claims History File. Population information from June 30 Medicare Part B enrollment files.

Table IV-2

Medicare Part B Fee-for-Service Claims: Allowed Charges by Type of Service and by Physician/Supplier Specialty Category, 1991, 1992, and 1993

Specialty Category	Year	Total	Medical visits and Consultations	Surgery, Rad Ther., Anesthesia, Assistants	X-ray and Lab Tests	All Other
		Allowed charges in millions				
Total	1993	$46,124	$16,311	$12,984	$8,962	$7,868
	1992	43,942	14,926	13,301	8,785	6,930
	1991	42,915	13,885	14,116	8,727	6,186
Nonphysician	1993	10,282	258	345	2,506	7,174
	1992	9,088	153	351	2,370	6,214
	1991	8,008	230	361	2,051	5,366
Supplier	1993	6,384	166	38	167	6,012
	1992	5,668	63	20	167	5,418
	1991	5,021	42	12	193	4,774
Facility or lab	1993	3,268	18	15	2,325	910
	1992	2,886	28	51	2,192	615
	1991	2,557	137	103	1,848	469
Practitioner	1993	630	74	292	13	252
	1992	534	62	280	11	181
	1991	430	51	246	10	123
Physician	1993	35,842	16,053	12,639	6,456	694
	1992	34,854	14,773	12,951	6,415	715
	1991	34,906	13,655	13,755	6,676	820
Primary Care Specialties	1993	3,755	2,989	242	462	62
	1992	3,376	2,658	232	459	27
	1991	2,976	2,237	227	479	33
Medical Specialty	1993	13,450	8,667	1,921	2,371	489
	1992	12,616	7,879	1,982	2,233	522
	1991	12,204	7,275	2,123	2,291	515
Surgical Specialty	1993	11,515	3,043	7,794	650	37
	1992	11,491	2,835	7,978	631	47
	1991	11,981	2,620	8,651	605	105
Other Physician Specialty	1993	4,855	166	1,931	2,714	44
	1992	4,960	155	1,973	2,792	40
	1991	4,942	145	1,867	2,875	55
Clinics/ Unknown 1/	1993	1,025	525	253	219	28
	1992	1,244	620	329	259	36
	1991	1,680	800	453	378	49
Chiropractors, Optometrists, and Podiatrists	1993	1,242	673	495	40	34
	1992	1,167	625	457	42	43
	1991	1,123	577	432	48	66

1/ Includes unknown physician specialties.

NOTE: HCFA is Health Care Financing Administration.

SOURCE: HCFA Part B Monitoring System: Allowed charges derived from HCFA National Claims History File.

Table IV-3

Medicare Fee-for-Service Claims: Allowed Charges and Percent of Total by Physician Specialty Category, 1991, 1992, 1993 and Preliminary 1994

Physician Specialty Category and Year	Allowed Charges	Percent of Total
	in millions	
All Physicians		
1994 preliminary	$36,289	100.0
1993	35,842	100.0
1992	34,854	100.0
1991	34,906	100.0
Primary Care		
1994 preliminary	3,762	10.4
1993	3,755	10.5
1992	3,376	9.7
1991	2,976	8.5
Medical		
1994 preliminary	13,563	37.4
1993	13,450	37.5
1992	12,616	36.2
1991	12,204	35.0
Surgical		
1994 preliminary	11,657	32.1
1993	11,515	32.2
1992	11,491	33.0
1991	11,981	34.3
Other Physician		
1994 preliminary	4,572	12.6
1993	4,855	13.5
1992	4,960	14.2
1991	4,942	14.2
Clinics/Unknown 1/		
1994 preliminary	1,516	4.2
1993	1,025	2.9
1992	1,244	3.6
1991	1,680	4.8
Chiropractors, Optometrists and Podiatrists		
1994 preliminary	1,219	3.4
1993	1,242	3.5
1992	1,167	3.3
1991	1,123	3.2

1/ Includes unknown physician specialties.

NOTES: HCFA is Health Care Financing Administration. NCH is National Claims History. Preliminary 1994 data are derived from services performed in 1994 and recorded in the NCH file by December 31, 1994. Final totals for 1994 will be developed after June 30, 1995.

SOURCE: HCFA Part B Monitoring System: Allowed charges derived from HCFA National Claims History file.

Table IV-4

Percent Changes in Medicare Part B Fee-for-Service Enrollment and Allowed Charges for Physician Services, by Region and State, 1991-92 and 1992-93

Region and State	Percent Changes Fee-for-Service Enrollment 1		Allowed Charges 2	
	1991-92	1992-93	1991-92	1992-93
Total, All Areas	1.7%	1.4%	0.1%	2.8%
United States	1.6	1.4	0.1	2.8
New England	1.4	2.3	0.8	6.2
Connecticut	1.3	1.3	-2.8	5.3
Maine	2.3	2.2	2.3	7.4
Massachusetts	1.2	3.4	2.0	7.4
New Hampshire	3.4	2.7	8.2	4.7
Rhode Island	-0.1	-0.4	0.0	2.8
Vermont	1.3	2.6	2.1	6.1
Middle Atlantic	1.4	0.8	2.6	4.1
New Jersey	1.7	1.2	4.2	6.0
New York	1.0	0.6	1.9	4.6
Pennsylvania	1.8	1.0	2.6	1.6
East North Central	1.8	1.6	2.0	2.5
Illinois	1.3	0.8	1.4	2.1
Indiana	1.2	2.0	4.6	2.9
Michigan	2.5	2.1	-2.9	2.9
Ohio	1.7	1.8	0.1	2.4
Wisconsin	1.5	1.9	3.8	2.4
West North Central	1.4	1.5	0.6	1.4
Iowa	0.6	1.0	1.6	1.8
Kansas	2.1	1.3	-1.0	2.6
Minnesota	1.8	2.8	1.9	1.9
Missouri	1.1	1.3	0.6	0.7
Nebraska	2.0	1.6	-1.6	2.2
North Dakota	1.1	0.5	2.3	-1.1
South Dakota	0.8	1.0	1.2	0.0
South Atlantic	2.2	2.3	-0.2	4.1
Delaware	5.1	3.3	8.2	3.3
District of Columbia	0.0	-0.3	1.5	1.9
Florida	1.3	1.7	-2.8	4.6
Georgia	3.0	2.9	1.7	3.7
Maryland	2.7	2.0	2.2	2.7
North Carolina	2.9	3.0	4.2	4.0
South Carolina	3.2	3.2	4.1	4.5
Virginia	2.4	2.7	0.0	5.6
West Virginia	1.8	2.1	-0.9	1.7

See footnotes at end of table.

Table IV-4 Continued)

Percent Changes in Medicare Part B Fee-for-Service Enrollment and Allowed Charges for Physician Services, by Region and State, 1991-92 and 1992-93

Region and State	Percent Changes Fee-for-Service Enrollment 1/		Allowed Charges 2/	
	1991-92	1992-93	1991-92	1992-93
East South Central	2.4%	2.2%	2.1%	3.1%
Alabama	2.4	2.4	2.7	1.9
Kentucky	2.8	2.2	1.1	4.2
Mississippi	1.6	1.1	1.5	6.9
Tennessee	2.4	2.5	2.5	1.9
West South Central	2.2	2.0	-1.7	2.1
Arkansas	1.7	1.4	-3.2	0.0
Louisiana	3.0	2.2	-3.6	3.2
Oklahoma	0.4	1.2	-1.4	2.0
Texas	2.5	2.3	-0.9	2.1
Mountain	2.0	1.3	-0.1	0.8
Arizona	-0.1	-1.0	-2.4	-3.0
Colorado	2.5	2.7	3.3	2.8
Idaho	2.4	2.1	6.7	7.5
Montana	2.2	1.8	2.4	8.2
Nevada	5.5	2.1	-4.1	2.2
New Mexico	3.1	2.8	-3.2	3.3
Utah	2.0	0.2	6.7	3.6
Wyoming	2.9	3.9	4.2	8.0
Pacific	-0.2	-1.4	-5.3	-0.8
Alaska	9.0	6.6	-5.0	5.0
California	-0.9	-2.2	-6.4	0.0
Hawaii	1.5	3.5	-2.2	4.5
Oregon	0.3	-2.3	0.4	-2.5
Washington	4.7	1.4	-0.6	-2.3
Outlying and Foreign (Mainly Puerto Rico)	6.8	2.9	0.4	11.7

1/ Calculations based on 32.2 million enrollees in 1993, 31.7 million in 1992, and 31.2 million in 1991. Enrollees were classified by their State of residence

2/ State figures exclude allowed charges from DME Regional Carriers (DMERC) and Railroad Retirement Board (RRB) carriers. Allowed amounts are classified according to the State served by the reporting Part B carrier. Hence, the allowed amounts per state may differ from the amounts of services to resident enrollees of the State

NOTES: DME is durable medical equipment. HCFA is Health Care Financing Administration.

SOURCE: Enrollment calculations derived from June 30 Medicare Part B Enrollment files. Allowed charges calculations from HCFA Part B Monitoring System: HCFA National Claims History file.

Table IV-5

Medicare Part B Fee-for-Service Claims: Allowed Charges for Physician Services by Region and State, 1991, 1992, and Final 1993 and Preliminary 1993 and 1994

Region and State and Carrier	Calendar Year			Calendar Year Preliminary 1	
	1991	1992	1993	1993	1994
	In millions				
Total All Areas	$34.906	$34.854	$35.842	$32.040	$36.289
RRB and DEMERC	787	713	730	612	1.042
New England	1,784	1,798	1,910	1,738	1,936
Connecticut	527	512	539	493	540
Maine	132	135	145	132	148
Massachusetts	834	851	914	827	924
New Hampshire	98	106	111	103	119
Rhode Island	145	145	149	136	154
Vermont	48	49	52	47	51
Middle Atlantic*	6,699	6,866	7,147	6,286	7,031
New Jersey	1,245	1,297	1,375	1,203	1,356
New York	2,888	2,942	3,076	2,675	3,033
Pennsylvania	2,310	2,370	2,409	2,159	2,352
Puerto Rico*	256	257	287	249	290
East North Central	5,443	5,552	5,689	5,121	5,795
Illinois	1,387	1,406	1,431	1,287	1,440
Indiana	634	663	682	618	687
Michigan	1,352	1,391	1,430	1,296	1,488
Ohio	1,513	1,514	1,550	1,392	1,578
Wisconsin	557	578	592	528	602
West North Central	2,072	2,085	2,114	1,924	2,152
Iowa	320	325	331	305	336
Kansas	307	304	312	284	318
Minnesota	363	370	377	340	386
Missouri	722	726	731	667	742
Nebraska	189	186	190	171	192
North Dakota	86	88	87	77	89
South Dakota	85	86	86	80	89
South Atlantic	6,844	6,831	7,110	6,402	7,363
Delaware	85	92	95	86	96
Dist. of Columbia	406	412	420	376	432
Florida	3,313	3,220	3,368	3,050	3,523
Georgia	747	760	788	704	809
Maryland	466	478	491	439	492
North Carolina	716	747	777	680	778
South Carolina	338	352	368	335	399
Virginia	538	538	568	521	596
West Virginia	234	232	236	211	238

See footnotes at end of table.

Table IV-5 Continued

Medicare Part B Fee-for-Service Claims: Allowed Charges for Physician Services by Region and State, 1991, 1992, and Final 1993 and Preliminary 1993 and 1994

Region and State and Carrier	Calendar Year			Calendar Year Preliminary 1	
	1991	1992	1993	1993	1994
			In millions		
East South Central	1,943	1,984	2,046	1,838	2,069
Alabama	557	572	583	530	607
Kentucky	445	450	469	420	474
Mississippi	273	277	296	270	303
Tennessee	668	685	698	618	685
West South Central	3,227	3,173	3,239	2,876	3,283
Arkansas	346	335	335	306	344
Louisiana	590	569	587	525	599
Oklahoma	351	346	353	319	356
Texas	1 940	1,923	1,964	1,717	1,984
Mountain	1,394	1,392	1,410	1,262	1,412
Arizona	544	531	515	465	508
Colorado	245	253	260	229	268
Idaho	75	80	86	77	89
Montana	83	85	92	81	91
Nevada	194	186	190	170	189
New Mexico	125	121	125	113	118
Utah	104	111	115	103	120
Wyoming	24	25	27	24	29
Pacific	4,713	4,436	4,448	3,990	4,206
Alaska	21	20	21	18	22
California	3,797	3,553	3,554	3,188	3,326
Hawaii	90	88	92	83	88
Oregon	275	276	269	244	252
Washington	529	526	512	457	518

1/ Preliminary figures include bills received as of December 31, 1993, or December 31, 1994. For 1993, the preliminary figure ($32,040) was 89.43 percent of the ultimate calendar 1993 figure ($35,842) calculated from receipts through June 30, 1994.

*Puerto Rico included with Middle Atlantic region because it is part of HCFA New York Regional Office.

NOTES: RRB is Railroad Retirement Board, DMERC is Durable Medical Equipment Regional Carrier.

HCFA is Health Care Financing Administration.

SOURCE: HCFA Part B Monitoring System: HCFA National Claims History file.

Table IV-6

Geographic Differences in Medicare Payment Rates for Selected Procedures,
Adjusted Historic Payment Basis through 1995

Code	Procedure and Payment Range	Payment Amount				
		AHPB	1992	1993	1994	1995
27130	Hip Replacement					
	High	2,571	2,256	2,271	2,364	2,465
	Low	1,601	1,531	1,550	1,576	1,596
	Range	970	725	721	788	869
33207	Pacemaker, Ventricular					
	High	1,066	976	904	899	924
	Low	576	522	523	568	626
	Range	490	454	381	331	298
44950	Appendectomy					
	High	838	769	711	682	669
	Low	288	343	354	385	405
	Range	550	426	357	297	264
47600	Gallbladder Removal					
	High	1,296	1,189	1,110	1,079	1,076
	Low	620	551	579	628	670
	Range	676	638	531	451	406
52601	Transurethral Prostatectomy					
	High	1,204	1,067	1,054	1,093	1,184
	Low	668	727	729	785	825
	Range	536	340	325	308	359
66984	Cararact Removal with IOL					
	High	1,606	1,443	1,388	1,377	1,371
	Low	1,109	854	856	866	887
	Range	497	589	532	511	484
99204	New patient Office visit (45 min.)					
	High	112	98	97	101	108
	Low	32	44	52	64	73
	Range	80	54	45	37	35
99213	Established Patient Office visit (15 min.)					
	High	45	39	39	40	42
	Low	15	20	22	25	25
	Range	30	19	17	15	17

See footnotes at end of table.

Table IV-6 Continued
Geographic Differences in Medicare Payment Rates for Selected Procedures,
Adjusted Historic Payment Basis through 1995

Code	Procedure and Payment Range	Payment Amount				
		AHPB	1992	1993	1994	1995
99244	Office consultation (60 min.)					
	High	155	136	134	137	144
	Low	54	68	75	84	95
	Range	101	68	59	53	49
99222	Initial Hospital Visit (50 min.)					
	High	127	111	110	114	117
	Low	47	58	64	71	79
	Range	80	53	46	43	38
99232	Subsequent Hospital Visit (25 min.)					
	High	61	53	53	54	55
	Low	19	25	29	34	38
	Range	42	28	24	20	17
99254	Consultation, Inpatient (80 min.)					
	High	155	136	135	137	145
	Low	54	68	75	85	95
	Range	101	68	60	52	49

NOTES: IOL is intraocular lens. AHPB is Adjusted Historic Payment Basis.
AHPB is the 1991 Historic Payment Basis calculated by each carrier at the locality level and adjusted prior to applying transition rules. Specifically, the 1.9 percent update factor for 1992 and 5.5 percent reduction was applied to account for the cost of the transition.

PAYMENT is the locality specific payment amount (cents deleted) after rules of transition have been applied. This column contains either the Full Fee Schedule amount or a calculated transition amount based on the transition rules. For a description of these amounts, see the November 21, 1991 "Federal Register" final rule for the Medicare fee schedule.

In the few cases where there was no AHPB for a locality, the payment was set at the full fee schedule amount. Had such locality payments been omitted from the table, the ranges would have been more narrow.

The specific localities that received the HIGH or LOW payment amount for a procedure tended to change for most procedures over time. As of 1996, the geographic range in payment amounts will be determined solely by the Geographic Practice Cost Indices. For 1996, the highest payment amounts for most procedures will occur in Manhattan where the average geographic adjustment factor will be 1.225, while the lowest payment amounts normally will occur in Puerto Rico where the average geographic adjustment factor will be 0.794.

SOURCE: Medicare Public Use files.

Table IV-7

Medicare Part B Fee-for-Service Enrollees: Annual Percent Using Services by Physician/Supplier Specialties, 1990 through 1993

Physician Specialty Category	Percent Using Named Specialty			
	1990	1991	1992	1993
Primary Care				
Family Practice	24	28	31	33
General Practice	19	24	20	18
Emergency Physicians	*	*	6	12
Medical				
Internal Medicine	42	47	45	44
Cardiology	19	22	17	18
Gastroenterology	5	7	6	8
Neurology	5	6	6	6
Pulmonary Disease	4	5	4	5
Psychiatry	3	4	4	4
Hematology/Oncology	*	*	2	3
Rheumatology	*	*	2	2
Nephrology	1	2	2	2
Physical Medicine & Rehabilitation	1	2	2	2
Endocrinology	*	*	1	2
Infectious Disease	1	1	1	1
Allergy/Immunology	1	1	1	1
Medical Oncology	*	*	1	1
Geriatrics	*	*	1	1
Pediatrics	*	1	1	1
Surgical				
Ophthalmology	27	32	34	32
General Surgery	12	14	14	13
Dermatology	9	11	11	11
Orthopedic Surgery	9	11	11	11
Urology	8	10	11	11
ENT	7	8	8	8
Obstetrics and Gynecology	4	5	5	6
Thoracic Surgery	2	3	2	2
NeuroSurgery	1	1	1	1
Plastic Surgery	1	1	1	1
Vascular Surgery	*	*	1	1
Colorectal Surgery	1	1	1	1
Other Physician				
Diagnostic Radiology	43	49	50	50
Pathology	12	14	15	15
Anesthesiology	11	14	14	13
Nuclear Medicine	*	1	1	1
Radiation Oncology	*	*	1	1
Invasive Radiology	*	*	1	1
Clinics and Unspecified				
Physicians	18	18	14	10

See footnotes at end of table.

Table IV-7 Continued

Medicare Part B Fee-for-Service Enrollees: Annual Percent Using Services by Physician/Supplier Specialties, 1990 through 1993

Physician Specialty Category	Percent Using Named Specialty			
	1990	1991	1992	1993
Limited License Physicians				
Podiatry	12	14	14	14
Optometrist	8	10	10	10
Chiropractor	3	4	4	4
Non-Physician Suppliers				
Independent Laboratories	39	45	46	47
Ambulance Suppliers	8	9	9	10
DME Suppliers (no CO, CP, COP)	7	8	7	8
CR Nurse Anesthetists	4	5	5	5
Suppliers (Drug/Dept. Stores)	3	4	5	5
Ambulatory Surg. Facilities	4	5	3	3
Portable X-ray Suppliers	2	2	2	2
Independent Physiological Labs	*	*	1	1
Public Welfare Agencies	*	*	*	1
Unspecified Suppliers	1	1	1	1
Physical Therapists	1	1	1	1
Clinical Psychologists	*	*	1	1
Any Physician or Supplier	90	94	94	96

NOTES: * means data for the specialty did not exist or that less than 0.5 percent of beneficiaries had bills from this specialty that year. UPIN is Unique Physician Identification number. HCFA is Health Care Financing Administration.

A beneficiary is counted once in each specialty for which services are reported, regardless of the number of different physicians or suppliers of a type who provided the service or the number of different places involved in the beneficiary's care.

This table omits all specialty categories for which less than 0.5 percent of beneficiaries had bills for the years 1990-93.

In interpreting changes between years, keep in that that: 1) there were thousands of changes in physicia n specification of specialty as UPINs were implemented (which especially lowered the clinic, ambulatory surgicenter and unspecified physicians categories) and changes in HCFA codes to accommodate additional specialties (which especially lowered general practice, general surgery, internal medicine, cardiology, thorscic surgery and radiology), For years in which this occurred, a physician may have billed in two different categories. 2) HCFA's data gathering methods changed as the National Claims History file was implemented. 3) A physician's specialty may change over time. 4) The number of individuals and firms in a specialty category changes from year to year.

SOURCE: Percentages were derived from the June 30 enrollment status and annual Part B claims of a 5 percent sample of Medicare Part B enrollees provided by the Office of Research and Demonstrations, former Division of Program Studies, Medicare Program Studies Branch.

Table IV-8
Medicare Part B Fee-for-Service beneficiaries: Annual
Percent Receiving Services by Place of Service, 1990 through 1993

Place of Service	Percent Receiving Part B Care			
	1990	1991	1992	1993
All	90	94	94	96
Office	84	87	87	88
Independent Laboratory	41	44	44	44
Hospital Outpatient Department	45	49	45	43
Hospital Inpatient	26	27	26	25
Hospital Emergency Room	NC	NC	18	23
Home	7	8	10	11
Ambulance	NC	NC	9	10
Skilled Nursing Facility	5	6	6	6
Nursing Home	5	5	5	5
Ambulatory surgical Center	3	3	3	3

NOTES: NC means that codification of this place of service was not performed in that year.

A beneficiary is counted once in each place of service in which care was received regardless of the number of different places of a type or the number of different physicians or suppliers that were involved in the beneficiary's care.

This table omits all place of service categories that were used by less than 0.5 percent of beneficiaries receiving covered care.

SOURCE: Percentages were derived from the June 30 enrollment status and annual Part B claims of a 5 percent sample of Medicare Part B enrollees provided by the Office of Research and Demonstrations, former Division of Program Studies, Medicare Program Statistics Branch.

Table IV-9
Medicare Part B Fee-for-Service Claims: Allowed Charges for Physician Services
by Place of Service, 1991, 1992, 1993, and Preliminary 1994

Place of Service	1991		1992		1993		Preliminary 1994	
	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent
	Amounts in millions							
All	$34,906	100.0	$34,854	100.0	$35,842	100.0	$36,289	100.0
Office	13,677	39.2	13,940	40.0	15,052	42.0	15,634	43.1
Home	158	0.4	146	0.4	138	0.4	453 [1]	1.2
Hospital Inpatient	13,986	40.1	13,210	37.9	13,079	36.5	12,455	34.3
HOPD or ER	5,587	16.0	5,465	15.7	5,549	15.5	5,649	15.6
Ambulatory Surgical Center	493	1.4	669	1.9	747	2.1	797	2.2
Nursing Home	518	1.5	677	1.9	755	2.1	808	2.2
All Other	488	1.4	747	2.1	522	1.4	493	1.4

1 See End-Notes.

NOTES: HOPD means hospital outpatient department. ER means emergency room. HCFA means Health Care Financing Administration.

SOURCE: HCFA Part B Monitoring System: HCFA's National Claims History file.

Appendix V

Beneficiary Access and Utilization

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Appendix V

Beneficiary Access and Utilization

INTRODUCTION

Because the physician payment reform (PPR) provisions of the Omnibus Budget Reconciliation Act (OBRA) of 1989 represent major changes in the method of paying physicians, both physician behavior and beneficiary access to care may be affected. This appendix presents information on access to care as measured by actual use of services. The data in this appendix include information from the 2 years preceding implementation of the Medicare Fee Schedule (MFS) (calendar years 1990 and 1991), final data from 1992 and 1993, and preliminary data for 1994. All analyses in this appendix are limited to services covered under the MFS, billed by both physicians and non-physicians.

Particular importance is attached to demographic variation in access to care. Many studies suggest that blacks use less ambulatory medical care than do whites, despite having higher mortality and morbidity rates (HCFA, 1990a; HCFA, 1990b; JAMA, 1990; NCHS, 1990). Another population subgroup thought to be particularly vulnerable are the older elderly (those over age 85). Persons in rural areas are also disadvantaged relative to persons in urban areas, with respect to poverty, mortality rates, and measures of potential access such as physician to population ratios (Office of Technology Assessment (OTA), 1990; Hewitt, 1989). The analyses in this appendix focus on these population subgroups to continue the process of assessing changes in use patterns over time.

This appendix focuses on overall trends in allowed charges and utilization rates by type of service. Although the primary intent of the monitoring system is to examine use of services, the allowed charge data are important for understanding the fiscal magnitude of various types of services.

Monitoring physician visits is particularly important for several reasons. First, physician visits in the ambulatory setting typically represent an individual's entry into the medical care delivery system. To the extent that Medicare beneficiaries have access to and use primary care physician services, they have entered the health care delivery system, and potentially have access to specialists and more advanced, procedural services. Second, evaluation and management services by physicians account for a large proportion of the total Medicare outlays for physician care. In 1990, these services accounted for 38.9 percent of the total allowed charges for physician services included in the MFS. Third, one of the aims of physician payment reform was to shift the weight of payments from the procedural types of care to the evaluation and management types of services.

It is also of interest to monitor a variety of other services as well. Recent studies have shown that use of revascularization procedures are much lower among black persons than among white persons (Ayanian, et al, 1993, Escarce, et al, 1993). The monitoring system allows an examination of any

trends that may be occurring in this relative use. More recently, analyses of Medicare data (McBean and Gornick, 1994) have shown that, although black Medicare beneficiaries are more likely to be hospitalized than white beneficiaries, they are less likely to receive many surgical procedures than are white Medicare beneficiaries. The monitoring system allows an examination of black/white differentials across a variety of ambulatory procedures in addition to inpatient procedures.

Trend data on physician visits are shown in several Figures by demographic and geographic population subgroups for ambulatory visits only. That is, hospital visits are not included.[2] As primary access points, ambulatory visits are the most relevant type of physician visit. Because physician contacts in the inpatient setting are contingent on hospitalization, these visits are not as appropriate for measuring access to medical care. The inclusion of hospital visits (not shown) does not appreciably change the patterns displayed in the Figures.

It should be noted that the rates of physician visits described in this appendix may differ from those calculated using data from the Medicare Current Beneficiary Survey (MCBS) or from the National Health Interview Survey (NHIS). There are a number of differences in data collection methodologies. For example, the NHIS surveys exclude persons living in long term care facilities. The administrative data used in this appendix cover all physician contacts, including those in long term care settings.

METHODS

Sources of Data

Utilization data for this study were generated from two sources. Data for the years 1990 and 1991 were taken from the Part B Medicare Annual Data (BMAD) beneficiary files. The beneficiary BMAD data provide detailed procedure level information on services received by a 5-percent random sample of Medicare beneficiaries. Whereas the 1990 BMAD file was created from files submitted to HCFA by the Medicare carriers, the 1991 BMAD file was created by HCFA's Bureau of Data Management and Strategy directly from National Claims History (NCH) claims processed by staff responsible for maintenance of the Common Working File. Another difference between the 1990 and 1991 BMAD files is that the 1990 file was updated through March of 1991 while the 1991 BMAD was updated through June 1992. Therefore, it is likely that some differences in processing or reporting could inflate the changes in rates between 1990 and 1991. The data for 1992 through 1994 come from the Part B beneficiary-based monitoring system and were compiled from the 100 percent NCH data base. This monitoring system is designed to have complete updates for 12 months after the end of each quarter. For example, the January-March 1992 quarter was updated through March 1993; the April-June 1992 quarter was updated through June 1993, and so on. Whereas the 1992

[2] Because most consultations are in the inpatient setting, Figures II-2 through II-6 exclude both hospital and consultations. Special services are included in the ambulatory category, although some of these services (particularly pathology and psychiatry) take place in the inpatient setting.

and 1993 data presented in this appendix represent complete updates, the 1994 data are as yet incomplete. The data include all bills processed through December 1994.

Denominators, based on mid-year enrollment, were developed from the Medicare beneficiary denominator files in order to calculate rates of physician visits per 1,000 beneficiaries. Persons belonging to a health maintenance organization (HMO) or a Health Care Prepayment Plan (HCPP) (about 10 percent of the Medicare population) were excluded because they do not receive Part B services through fee-for-service claims. Denominator files were available for the years 1990 through 1993. Estimates of 1994 Medicare Part B eligible persons were made by inflating the 1993 population counts by the observed annualized rate of change between 1990 and 1993.

Type of Service Classification System

Service coding is based on the HCFA Common Procedure Coding System (HCPCS). Current Procedural Terminology (CPT-4) codes represent the component of HCPCS for physicians' services. These codes are used for Part B billing purposes and are much too detailed (there are over 12,000 individual codes) for meaningful analysis of beneficiary use of services. For example, prior to 1993 there were nine different codes for coronary artery bypass graft (CABG) surgery based on the number of grafts and whether the graft is autogenous or nonautogenous. Such distinctions are important for payment purposes or for specific studies of CABG but are largely irrelevant for examining utilization differences across population subgroups. On the other hand, the broad type of service classifications available on the BMAD files (e.g., medical, surgical, and consultation) lack many clinical distinctions that may be important to track in a system designed to monitor beneficiary use of services.

A type of service classification system, Berenson-Eggers type of service (BETOS), has been developed by researchers at the Urban Institute (Holahan, et al.) and staff in the Office of Research in HCFA. HCPCS codes have been categorized into 77[3] specific groupings representing all services covered under the MFS, with the expectation that variations in treatment can be tracked effectively with these distinctions. For example, there are over 500 separate HCPCS codes representing various types and levels of physician visits and consultations which have been grouped into 6 major types: office (including outpatient departments); hospital (inpatient only); emergency room; nursing home and home; special services; and consultation. A detailed description of the BETOS service classification system was include in the 1994 Report to Congress.

Geographic Classification

The urban/rural classification used in this appendix is the Human Resource Profile County (HRPC) coding system established by the Office of Management and Budget based on work conducted at the

[3] The entire BETOS classification system includes all Part B services processed by Medicare carriers, including durable medical equipment, laboratory tests, drugs and ambulance services. There are 105 categories in all. However, only the 77 specific to the Medicare Fee Schedule are covered in this appendix.

Department of Agriculture. It classifies metropolitan statistical areas (MSA) into large core, fringe, medium, and small. The non-MSA areas are divided into urban, lesser urban, and thinly populated areas. Each of these nonmetropolitan areas is further divided into areas adjacent to and not adjacent to metropolitan areas. In their overview of urban/rural designations, the Office of Technology Assessment (OTA) recommended this typology as perhaps the best for assessing issues of access to medical care (OTA, 1990). All the data processed through 1993 are based on the 1980 HRPC groupings. The U.S. Census Bureau has recategorized about 600 counties based on 1990 census data. Most of this change was in the direction of increased urbanization. The largest percentage change was in the most urban area, core counties in large metropolitan areas, increasing from 58 counties in 1980 to 177 in 1990. Beginning in 1994, the monitoring system began using the new groupings. Therefore, changes in relative use rates that may occur in 1994 may be due as much, or more, to classification changes as to underlying use trends. This typology is described in Technical Note A.

An additional geographic grouping of States was developed based on the expected impact of the MFS. Because the MFS replaced the carrier-specific rates with a national system in which regional variation will be based only practice costs, the average change in price for physician services will vary considerably across areas of the country. The expected impact of these price changes by State was published in the November 25, 1991, Federal Register Vol. 56(227). Accordingly, State "Ex Ante impact" areas were defined based on the estimated price impact of the MFS. States were grouped according to the overall estimated change in average Medicare physician prices (compared to what prices were expected to have been without the MFS) by 1996 as follows: (1) Increase (+4 percent to +12 percent); (2) No Change (+3 percent to -3 percent), (3) Moderate decrease (-4 percent to -9 percent); and (4) Large Decrease (-10 percent to -20 percent). A listing of the States and their position in the Ex Ante classification is presented in Technical Note B.

RESULTS

Total Allowed Charges for Services Covered Under the MFS

In 1990, allowed charges for physician services covered under the MFS totaled $29.9 billion (Table V-1). Allowed charges increased by 10.4 percent to $33.0 billion in 1991, decreased by 0.8 percent (to $32.8 billion) in 1992, and increased by 4.0 percent (to $34.1 billion) in 1993.[4] Rates of change varied greatly by broad type of service. Allowed charges for visits and consultations increased by 8.6 percent in 1993 (similar to the 8.2 percent increase in 1992). Allowed charges for procedures remained unchanged in 1993 (following a 9.1 percent decrease in 1992) resulting in nominal charges for 1993 that were lower than in 1990 ($13.8 billion and $13.9 billion, respectively). Allowed charges for imaging services increased slightly in 1993 (1.8 percent) following a 0.3 percent increase from 1991 to 1992. As a result of these trends, there has been a marked shift in charges by

[4]Appendix IV shows a 5.0 percent increase in fee for service allowed charges between 1992 and 1993. However, the figures in Appendix IV include services not covered by the MFS. Growth in non MFS covered services has been greater than in MFS covered services.

broad type of service. This is shown in Table V-1 and displayed graphically in Figure V-1. The share of physician allowed charges accounted for by imaging in 1990 was 14.7 percent and by 1993 had declined to 13.9 percent. There has been a decided shift in charges from the procedure categories to the medical visit category. In 1990, procedures accounted for 46 5 percent of allowed charges while medical visits accounted for 38.9 percent. By 1993, the share of Medicare allowed charges accounted for by medical visits increased to 45.8 percent with corresponding decreases in the share accounted for by procedures (40.4 percent in 1993). As can be seen in Table V-1 and Figure V-1, this shift from the procedure to the visit category appears to be continuing in 1994.[5].

Table V-2 shows the distribution of allowed charges for visits and consultations for the years 1990 through 1994. Increases in 1993 were under 8.0 percent for the two largest categories of visits, office and hospital based services. Percentage increases in 1993 were largest for emergency room visits (18.4 percent), home/nursing home visits (17.5 percent) and specialist visits (10.1 percent).

Allowed charges for procedures are shown in table V-3. Most of the categories experienced moderate changes (less than 10 percent higher or lower) in allowed charges from 1992 to 1993. Categories with more than a 10 percent decline in allowed charges included cholecystectomy (-13.1 percent), TURP (-10.5 percent), and cardiovascular stress tests (-16.6 percent). The decrease in cholecystectomy is due in part to the continued increase in laparoscopic cholecystectomy, which increased by 22.8 percent in 1993. Other categories showing large percentage increases in allowed charges in 1993 were treatment of retinal lesions (14.0 percent); minor skin procedures (11.4 percent); other oncology (14.7 percent); laryngoscopy (22.7 percent); other endoscopy (12.2 percent); electrocardiograms (12.7 percent); and other tests (30.8 percent).

Allowed charges for imaging services are shown in Table V-4. In 1993, standard imaging decreased by 0.7 percent. Most of the sub-categories had larger decreases, particularly breast imaging (-10.3 percent) and GI tract imaging (-20.2 percent). These were largely offset by a 15.0 percent increase in nuclear medicine. Advanced imaging increased by 1.2 percent, with moderate decreases for computerized axial tomography (CAT) scans and larger increases for magnetic resonance imaging (MRI). Sonography increased by 10.3 percent, largely driven by the 15.5 percent increase for echography of the heart.

Visits and Procedure Rates per 1,000 Beneficiaries

Tables V-5 through V-7 show estimated rates of visits and procedures per 1,000 beneficiaries. They are companion Tables to tables V-2 through V-4, respectively. Because the monitoring system which creates these counts is constructing on a flow basis, it is not possible to accurately count all services, particularly procedures. For example, CABG counts are based only on "type of service =

[5]As noted above, the 1994 data are still incomplete. However, a comparison of 1993 MFS services updated through December 1993 with 1993 MFS services updated through December 1994 shows a 12.6 percent increase in allowed charges The final 1994 allowed charge totals will depend on current bill processing lag rates. However, it is very likely that 1994 will represent an increase of 10 percent or more over 1993.

surgery". However, due to the complex nature of this procedure, it often happens that multiple "type of service = surgery" bills will occur for the same hospitalization. Thus, the physician billings tend to overstate the actual number of services as compared to hospitalization records. However, because it is unlikely that this bias changes over time, one can examine use rates by year to get rough estimates of trend effects.

Table V-5 shows visit and consultation rates for the years 1990 through 1994. Total visits and consultations increased from 12,054 per 1,000 in 1992 to 12,318 per 1,000 in 1993, an increase of 2.2 percent. Office visits increased by 3.1 percent while hospital visits remained essentially unchanged (a 0.2 percent decrease) in 1993. The largest increase in 1993, 12.4 percent in the psychiatry service category, was due to the extension of psychologist services to the outpatient setting[6].

All of the general major procedures (table V-6) experienced a drop in services per 1,000 beneficiaries, ranging from a 14.5 percent decrease in cholecystectomies to a 2.4 percent decrease in disc surgery. Since 1990, the rate of open cholecystectomy has decreased by almost one-half.

Except for PTCA, which increased by 6.2 percent in 1993, there was little change in the rate of major cardiovascular procedures. This is the second year in which there has been a noticeable decline in the rate of increase for major cardiovascular procedures. Between 1990 and 1991 PTCA and thromboendarterectomy increased by 45.4 percent and 37.2 percent, respectively. Both CABG and aneurysm repair experienced increases of over 10 percent in 1991.

Orthopedic procedures also experienced little change in 1993. Hip replacements were lower by 1.8 percent while there were modest increases in both knee revision (3.3 percent) and hip fracture repair (2.4 percent).

Eye procedures generally declined in 1993, with the exception of the treatment of retinal lesions which increased by 4.3 percent. The most common eye procedure is cataract removal/lens implant. The highest year for this procedure was 1991 when there were 46.7 procedures per 1,000 beneficiaries. This rate declined by 2.0 percent in 1992 and another 8.2 percent in 1993.

Table V-7 shows use rates per 1,000 beneficiaries for imaging services. Use of standard imaging services remained largely unchanged in 1993, with the exception of GI tract imaging which decreased by 7.6 percent. Breast imaging (mammography), which increased by 26 percent from 1990 to 1991, did not change much in the ensuing two years. Among advanced imaging services CAT scan use was largely unchanged in 1993 while MRI use increased by 4.4 percent for brain imaging and 7.9 percent for all other sites. Sonography showed a variety of changes in 1993 ranging from a 5.8 percent decrease in echography of the eye to a 23.6 percent increase in echography of the heart.

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[6]Beginning in 1992, payment for services provided by psychologists was expanded to all treatment settings, not just inpatient. Increases in psychiatric services are apparently due, in part, to a continuation of expanded psychologist services.

Geographic and age patterns in use of Ambulatory Physician Services

Figures V-2, V-3, and V-4 show trends in ambulatory physician visits per 1,000 beneficiaries by various geographical categories. These rates are based on the entire Medicare population, including the disabled and persons with end stage renal disease (ESRD). Using core metropolitan areas as the comparison, Figure V-4 shows relative use rates for (1) other metropolitan counties, (2) nonmetropolitan counties adjacent to metropolitan areas, and (3) nonmetropolitan counties not adjacent to metropolitan areas. All these areas had use rates consistently below core metropolitan areas for all the years under observation. However, in 1993 these three areas all experienced decreased relative use rates. This was due to a 10.4 percent increase in utilization in the core areas while all the other areas remained relatively stable.

Use rates by PPR Ex Ante impact areas are shown in Figure V-3. States in which physician payments prices were expected to experience no change were used as the comparison group. Between 1990 and 1993, physician visit rates increased in all categories of States. The slowest rate of increase occurred in the "no change" states (11.4 percent). Consequently, the relative use rates in the other groups of states increased. However, much of the state differentials occurred between 1990 and 1991. Relative to 1991, there has not been much change in the relative use rates between these categories of States.

The three counties selected for special observation maintained their high ambulatory physician visit rates during these years (Figure V-4) and, in fact, may be further increasing their distance from the national average. However, there is still considerable year to year fluctuation making conclusions problematic. For example, Los Angeles county's relative use rate decreased in both 1991 and 1992 before increasing in 1993. It should be noted that changes in relative use rates may be related to underlying changes in the market, including growth in managed care.

Figure V-5 shows relative use rates for ambulatory physician services by age group. Visit rates increased sharply with age. During the 1990 to 1993 time period, persons ages 75 to 84 used physician visit services at a 27 to 29 percent greater rate than persons ages 65 to 74. Rates for persons 85 years and over were between 62 and 71 percent greater than for persons 65 to 74. There were no trends in relative use during these years.

Trends in Black:White Differences in Utilization of Services[7]

Tables 8 through 10 show the ratio of use rates for black aged beneficiaries compared to white aged beneficiaries for the years 1990 through 1994. Rates were adjusted for differences by race in age and sex. Overall, black beneficiaries have physician visit utilization rates which are about 3 to 4 percent lower than white beneficiaries. This has remained relatively constant over the 5 years shown in Table 8. From 1990 through 1993 total visit rates increased by 9.6 percent for black beneficiaries and 10.5

[7]Note that the black white ratios in this section may differ slightly from those shown in appendix I. This is due to differences in file construction and the loss of some data in Appendix I in linking with Census income data.

percent for white beneficiaries. However, because hospital visit rates are nearly one-third higher for black beneficiaries, the total obscures the much lower use rates for black beneficiaries for ambulatory physician use. In 1990 the office visit rate for black beneficiaries was 13 percent lower than the rate for white beneficiaries. Even though the black rate increased over the next 3 years by 7.9 percent, the 12.4 percent increase for white beneficiaries resulted in a decline in the black white ratio, to 0.84 in 1993. This differential was offset by larger increases among blacks in other non-hospital categories, home\nursing home and specialist services.

Table 9 shows a wide variation in relative use of procedures by black compared to white beneficiaries. Among major general procedures, black beneficiaries are only one-half as likely as white beneficiaries to have disc surgery, a rate essentially unchanged during the 1990 to 1993 time period. In breast surgery (mostly mastectomy) the rate among black beneficiaries was 15 percent lower than for white beneficiaries in 1990 but was about two-thirds as great in the other years. Hysterectomy rates among black beneficiaries were about 50 to 60 percent as great as among white beneficiaries during most of these years. Cholecystectomy rates among black beneficiaries increased relative to white beneficiaries, from 0.54 in 1991 to 0.75 in 1993. However, this is most likely do to a shift from the open to the laparoscopic procedure. The black beneficiary rate declined by 36 percent whereas the white beneficiary rate declined by 48 percent. For laparoscopic cholecystectomy, the white beneficiary rate was double that of the black beneficiary rate in all the years.

The greatest discrepancies between white and black use rates were in the area of major cardiovascular procedures. For both CABG and PTCA there was a narrowing of the racial differential during these years. In 1990, the black rate of CABG was less than one-quarter that of the white rate. However, whereas the white rate increased by 76 percent from 1990 to 1993, the black rate increased by 176 percent resulting in a relative use rate of 0.41 in 1993. Similarly both blacks and whites experienced large increases in PTCA rates during these years. Because the black increases were greater than the white increases the relative use rate for blacks increased from 0.33 in 1990 to 0.46 in 1993. Relative use rates remained relatively stable for the other cardiovascular procedures during these years.

Orthopedic procedures are another area in which the black use rates are considerably below the white rates, with relative use rates in 1993 ranging from 0.42 for hip fracture repair to 0.62 for knee revision. There were no discernable trends in relative use rates during these years.

For three of the major eye procedures, black use rates are lower than white use rates. However, rates of treatment for retinal lesions are 50 percent higher for black beneficiaries than for white beneficiaries. There were no trends in relative use rates except for corneal transplants in which there was a fairly large increase between 1990 and 1991.

Relative use of endoscopy between black and white beneficiaries varied considerably. For upper G.I endoscopy, bronchoscopy, and laryngoscopy, black and white rates were very similar. Rates of other

forms of endoscopy were much lower for black beneficiaries ranging from a relative use rate in 1993 of 0.38 for arthroscopy (mostly of the knee) to 0.85 for colonoscopy.

Use of dialysis physician services was much higher for black beneficiaries than for white beneficiaries, which is consistent with the much higher rate of renal failure among black persons. However, the majority of dialysis related services were not covered under the MFS during these years, thus the rates do not reflect most of the services provided to dialysis patients.

Under the category of tests, black beneficiaries were somewhat more likely than white beneficiaries to receive EKG monitoring and about as likely to receive an electrocardiogram. However, the rate of cardiovascular stress tests was only about one-half as great among black patients as among white patients.

Imaging services are shown in Table V-10. For most imaging services, black and white rates are not very different. Black beneficiaries are somewhat more likely than white beneficiaries to get chest x-rays but have 20 percent fewer x-rays of the musculoskeletal system. Breast imaging (mammography) is much less frequent among black beneficiaries than among white beneficiaries, although the difference may be narrowing somewhat. Black beneficiaries have about one-third more cat scans of the head and very nearly an equal number of CAT scans elsewhere in the body as do white beneficiaries. MRI's are less common among black beneficiaries. In sonography, black beneficiary use rates are comparable to white beneficiary use rates except for echography of the eye and echography of the heart. Cardiac catheterization is about 50 percent lower for black beneficiaries than for white beneficiaries, a difference comparable to that for CABG and PTCA.

DISCUSSION

The first year (1992) of the MFS showed a slight decline in total allowed charges for physician services in the fee-for-service sector. This appears to have been a temporary lull in the continued increase in Medicare physician expenditure growth. Allowed charges increased by 4.0 percent in 1993 and initial data for 1994 suggest an increase in excess of 10.0 percent in 1994, much in line with historical changes. The MFS has had the intended effect of shifting spending from the procedure to the medical visit types of services. Visits and consults have increased as a percent of the total physician allowed charges in each of the years since 1991.

Since the implementation of the MFS there have been small increases in utilization rates for physician visits and consultations. This varies by type and place of service with the greatest percentage increases occurring in home/nursing home services and decreases occurring in inpatient hospital settings. The use of procedural services also varies considerably by type of service. The rate per 1,000 beneficiaries for many services declined in the post MFS time period including such things as cataract removal/lens implant. Even major cardiovascular procedures such as CABG and PTCA, which had shown consistent increases in the late 1980's are beginning to show signs of leveling off.

For the most part, there are considerable differentials in black/white use rates. The trends, however, are not consistent. Blacks have lower rates of use of ambulatory physician services and the differential may be increasing. On the other hand, there seems to be a narrowing of the gap between blacks and whites in the area of specialist visits and consultations. In terms of home/nursing home physician use, black use rates are greater than white rates and are increasingly so.

For most procedural categories black use rates are considerably below that of whites, sometimes by as much as 50 percent or more. Given the generally poorer health of black persons this raises concerns about poorer access to care for black beneficiaries. However, it does not appear that the MFS is exacerbating the differences. In fact, in some areas where the discrepancies are greatest, particularly such cardiovascular procedures as PTCA and CABG, black use rates have been increasing at a much faster rate than have white rates. Even so, within the cardiovascular area, black use rates are only about one-half as great, or less, as white rates in 1993.

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Technical Note A
Health Resource Profile Code Definitions

Metropolitan Counties	
Large Metropolitan:	
Core Counties	Core counties of metropolitan areas of 1,000,000 or more population
Fringe Counties	Noncore counties of metropolitan areas of 1,000,000 or more population
Medium Metropolitan	Counties of metropolitan areas of 250,000 to 999,999 population
Lesser Metropolitan	Counties of metropolitan areas of 50,000 to 249,999 population
Non Metropolitan Counties	
Urbanized:	
Adjacent to MSA	Counties contiguous to MSA with 20,000 or more urban residents
Not Adjacent to MSA	Counties not contiguous to MSA with 20,000 or more urban residents
Less Urbanized:	
Adjacent to MSA	Counties contiguous to MSA with less than 20,000 but greater or equal to 2,500 urban residents
Not Adjacent to MSA	Counties not contiguous to MSA with less than 20,000 but greater or equal to 2,500 urban residents
Thinly Populated:	
Adjacent to MSA	Counties contiguous to MSA with no urban residents
Not Adjacent to MSA	Counties not contiguous to MSA with no urban residents

** Note:

1) Non-adjacent = Non contiguous counties and contiguous counties having less than 1 percent of labor force commuting to the MSA.

2) Urban = Place or township, incorporated or unincorporated, of 2,500 or more population.

Technical Note B

PPR Payment Impacts, Ordered by State Impact
(Fed Reg Vol 56(227) Nov 25, 1991 page 59619)

State	Percent Change in Allowed Charges for Fee Schedule Relative to CPR: Payments per Service: 1996	Ex Ante Impact
United States	-6	
Mississippi	12	Increase
Iowa	9	Increase
Colorado	9	Increase
Wyoming	8	Increase
Minnesota	7	Increase
New Hampshire	6	Increase
Utah	5	Increase
Idaho	6	Increase
South Carolina	4	Increase
Michigan	4	Increase
Virginia	4	Increase
Vermont	2	No Change
Missouri	1	No Change
Nebraska	1	No Change
Rhode Island	1	No Change
Maine	1	No Change
Kentucky	0	No Change
South Dakota	0	No Change
Washington	-1	No Change
Wisconsin	-1	No Change
Montana	-2	No Change
North Carolina	-2	No Change
Tennessee	-2	No Change
Oregon	-2	No Change
Indiana	-2	No Change
Oklahoma	-3	No Change
Massachusetts	-3	No Change

PPR Payment Impacts, Ordered by State Impact
(Fed Reg Vol 56(227) Nov 25, 1991 page 59619)

State	Percent Change in Allowed Charges for Fee Schedule Relative to CPR: Payments per Service: 1996	Ex Ante Impact
United States	-6	
Pennsylvania	-4	Moderate Decrease
New Jersey	-4	Moderate Decrease
Kansas	-4	Moderate Decrease
Delaware	-4	Moderate Decrease
Illinois	-5	Moderate Decrease
North Dakota	-5	Moderate Decrease
Georgia	-6	Moderate Decrease
Alabama	-6	Moderate Decrease
Arkansas	-7	Moderate Decrease
West Virginia	-7	Moderate Decrease
Lousiana	-7	Moderate Decrease
District of Col.	-7	Moderate Decrease
Ohio	-7	Moderate Decrease
Connecticut	-8	Moderate Decrease
New York	-8	Moderate Decrease
New Mexico	-9	Moderate Decrease
Maryland	-10	Large Decrease
Texas	-11	Large Decrease
Arizona	-13	Large Decrease
California	-14	Large Decrease
Hawaii	-16	Large Decrease
Florida	-17	Large Decrease
Alaska	-19	Large Decrease
Nevada	-20	Large Decrease

Table V-1
Medicare Allowed Charges for Physician Services Covered by the Medicare Fee Schedule,
by Major Type of Service Category: 1990 to 1994

Service Category	1990	1991	1992	1993	1994*	1990-91	1991-92	1992-93
	Allowed Charges in millions					Percent Change		
Total	$29,922	$33,038	$32,775	$34,086	$34,006	10.4	-0.8	4.0
Visits and Consults	11,631	13,276	14,371	15,603	15,694	14.1	8.2	8.6
Procedures	13,902	15,132	13,760	13,758	13,906	8.8	-9.1	-0.0
Imaging	4,389	4,629	4,644	4,726	4,406	5.5	0.3	1.8
	Percent Distribution							
Total	100.0	100.0	100.0	100.0	100.0			
Visits and Consults	38.9	40.2	43.8	45.8	46.1			
Procedures	46.5	45.8	42.0	40.4	40.9			
Imaging	14.7	14.0	14.2	13.9	13.0			

* = Data for 1994 are incomplete

Source: 5 percent BMAD for 1990 and 1991; 1992 and later - Monitoring System.

Table V-1
Medicare Allowed Charges for Physician Services Covered by the Medicare Fee Schedule,
by Major Type of Service Category: 1990 to 1994

Service Category	1990	1991	1992	1993	1994*	1990-91	1991-92	1992-93
	Allowed Charges in millions					Percent Change		
Total	$29,922	$33,038	$32,775	$34,086	$34,006	10.4	-0.8	4.0
Visits and Consults	11,631	13,276	14,371	15,603	15,694	14.1	8.2	8.6
Procedures	13,902	15,132	13,760	13,758	13,906	8.8	-9.1	-0.0
Imaging	4,389	4,629	4,644	4,726	4,406	5.5	0.3	1.8
	Percent Distribution							
Total	100.0	100.0	100.0	100.0	100.0			
Visits and Consults	38.9	40.2	43.8	45.8	46.1			
Procedures	46.5	45.8	42.0	40.4	40.9			
Imaging	14.7	14.0	14.2	13.9	13.0			

* = Data for 1994 are incomplete

Source: 5 percent BMAD for 1990 and 1991; 1992 and later - Monitoring System.

Table V-2
Medicare Allowed Charges for Physician Services Covered by the Medicare Fee Schedule
Visits and Consultations: 1990 to 1994

Service Category	1990	1991	1992	1993	1994*	1990-91	1991-92	1992-93
	Allowed Charges in millions					Percent Change		
Total	$11,631	$13,276	$14,371	$15,603	$15,694	14.1	8.2	8.6
Office Visits	4,027	4,706	5,023	5,413	5,665	16.9	6.7	7.8
New	471	550	574	608	622	16.7	4.3	6.0
Established	3,556	4,157	4,449	4,805	5,043	16.9	7.0	8.0
Hospital Visits	3,725	4,007	4,116	4,404	4,161	7.6	2.7	7.0
Initial	628	680	713	808	791	8.2	4.9	13.3
Subsequent	2,549	2,721	3,123	3,284	3,073	6.8	14.8	5.2
Critical Care	548	606	279	311	296	10.6	-53.9	11.5
Emergency Room	483	610	645	764	789	26.1	5.8	18.4
Home/Nursing Home	419	493	554	651	664	17.7	12.3	17.5
Home	56	60	53	60	60	7.4	-11.2	13.2
Nursing Home	363	433	501	591	604	19.3	15.5	18.0
Specialists	1,711	2,026	2,196	2,418	2,471	18.4	8.4	10.1
Pathology	490	565	636	660	622	15.3	12.5	3.8
Psychiatry	348	498	656	788	812	43.0	31.8	20.1
Ophthalmology	821	899	840	900	954	9.6	-6.6	7.1
Other	52	65	65	70	83	24.6	-0.3	9.1
Consultation	1,094	1,242	1,616	1,716	1,726	13.6	30.1	6.2
Chiropractic	173	191	221	237	218	10.6	15.9	7.1

* = Data for 1994 are incomplete

Source: 5 percent BMAD for 1990 and 1991; 1992 and later - Monitoring System.

Table V-3
Medicare Allowed Charges for Physician Services Covered by the Medicare Fee Schedule,
Procedures: 1990 to 1994

Service Category	1990	1991	1992	1993	1994*	1990-91	1991-92	1992-93
	Allowed Charges in millions					Percent Change		
Total	$13,902	$15,132	$13,760	$13,758	$13,906	8.8	-9.1	-0.0
Major Procedure: General	1,704	1,690	1,496	1,466	1,400	-0.8	-11.5	-2.0
Breast	70	71	59	59	57	1.4	-17.6	0.2
Colectomy	182	172	148	150	146	-5.4	-14.1	1.3
Cholecystectomy	142	90	62	54	47	-36.4	-30.8	-13.1
TURP	233	221	161	144	124	-5.1	-26.9	-10.5
Hysterectomy	45	51	53	51	51	14.4	2.2	-3.2
Disc Surgery	151	170	164	168	161	12.5	-3.3	2.2
Other	881	914	848	840	813	3.7	-7.2	-1.0
Major Procedure: Cardiovascular	1,811	1,890	1,773	1,792	1,978	4.3	-6.2	1.0
CABG	569	549	493	482	482	-3.5	-10.2	-2.2
Aneurysm	80	76	64	64	60	-4.4	-16.5	0.8
Thromboendarterectomy	76	88	81	82	89	15.8	-8.4	0.6
PTCA	163	220	216	220	203	34.5	-1.9	2.2
Pacemaker	130	123	110	110	103	-5.0	-10.9	0.4
Other	793	833	810	833	1,041	5.0	-2.8	2.8
Major Procedure: Orthopedic	1,009	1,069	1,001	1,042	1,048	5.9	-6.3	4.1
Hip Fracture Repair	239	245	229	235	236	2.5	-6.5	2.9
Hip Replacement	234	239	201	201	199	2.1	-16.1	0.1
Knee Replacement	242	271	262	272	280	11.9	-3.3	3.8
Other	295	314	310	334	334	6.7	-1.3	7.8

* = Data for 1994 are incomplete

Source: 5 percent BMAD for 1990 and 1991; 1992 and later - Monitoring System

Table V-3 (Continued)
Medicare Allowed Charges for Physician Services Covered by the Medicare Fee Schedule,
Procedures: 1990 to 1994

Service Category	1990	1991	1992	1993	1994*	1990-91	1991-92	1992-93
	Allowed Charges in millions					Percent Change		
Total.	$13,902	$15,132	$13,760	$13,758	$13,906	8.8	-9.1	-0.0
Major Procedure: Eye	2,527	2,930	2,530	2,363	2,338	15.9	-13.7	-6.6
Corneal Transplant	43	45	36	35	32	4.1	-18.5	-2.8
Cat Rem/Lens Insert	1,579	1,813	1,584	1,432	1,446	14.9	-12.7	-9.6
Retinal Detachment	66	72	59	57	53	8.3	-17.7	-2.9
Treatm Retinal Lesions	172	188	147	168	181	9.0	-21.7	14.0
Other	667	812	704	671	626	21.8	-13.4	4.6
Ambulatory Procedures:	1,164	1,286	1,144	1,155	1,125	10.5	-11.0	1.0
Skin	446	501	452	448	446	12.2	-9.8	0.8
Musculoskeletal	178	199	173	173	171	11.6	-13.1	0.2
Hernia Repair	81	77	64	66	58	-5.4	-16.3	2.4
Lithotripsy	22	22	20	21	22	-1.3	-9.1	5.5
Other	436	487	435	448	428	11.8	-10.7	2.9
Minor Procedures:	1,181	1,348	1,406	1,509	1,577	14.1	4.3	7.4
Skin	586	648	699	779	813	10.5	7.9	11.4
Musculoskeletal	178	198	190	201	213	11.4	-4.4	6.0
Other	416	502	517	530	551	20.5	3.1	2.4
Oncology	618	719	799	807	753	16.3	11.1	1.0
Radiation Therapy	526	600	685	676	617	14.1	14.1	-1.3
Other	92	119	114	131	136	28.7	-3.7	14.7

* = Data for 1994 are incomplete

Source: 5 percent BMAD for 1990 and 1991; 1992 and later - Monitoring System

Table V-3 (Continued)
Medicare Allowed Charges for Physician Services Covered by the Medicare Fee Schedule,
Procedures: 1990 to 1994

Service Category	1990	1991	1992	1993	1994*	1990-91	1991 92	1992-93
	Allowed Charges in millions					Percent Change		
Total	$13,902	$15,132	$13,760	$13,758	$13,906	8.8	-9.1	0.0
Endoscopy	1,442	1,657	1,503	1,537	1,515	14.9	-9.3	2.3
Arthroscopy	67	79	76	83	85	18.6	-3.7	8.8
Upper GI Endoscopy	382	442	398	394	374	15.6	-9.9	1.2
Signoidoscopy	120	121	98	88	77	1.0	-19.1	9.9
Colonoscopy	468	497	451	460	456	6.3	-9.3	2.1
Cystoscopy	238	260	238	243	244	9.1	-8.5	2.3
Broncoscopy	86	94	80	76	68	9.6	-15.3	5.2
Laparoscopic Cholecystectomy	4	74	76	93	97	2006.9	2.1	22.8
Laryngoscopy	38	42	32	39	39	10.4	-23.4	22.7
Other	40	48	54	61	75	20.4	12.8	12.2
Dialysis	143	164	162	161	144	14.2	-1.0	-0.6
Tests	1,001	988	642	658	881	-1.3	-35.0	2.4
Other	48	54	68	89	84	12.6	25.9	30.8
Electrocardiograms	618	590	202	227	475	-4.5	-65.8	12.7
Cardiov Stress Tests	144	159	207	173	181	10.9	29.9	-16.6
EKG Monitoring	192	185	165	169	142	-3.2	-10.7	2.0
Anesthesia	1,301	1,392	1,305	1,267	1,147	7.0	-6.2	-2.9

* = Data for 1994 are incomplete

Source: 5 percent BMAD for 1990 and 1991; 1992 and later - Monitoring System

Table V-4

Medicare Allowed Charges for Physician Services Covered by the Medicare Fee Schedule

Imaging: 1990 to 1994

Service Category	1990	1991	1992	1993	1994*	1990-91	1991-92	1992-93
	Allowed Charges in millions					Percent Change		
Total	$4,389	$4,629	$4,644	$4,726	$4,406	5.5	0.3	1.8
Standard Imaging	1,889	1,937	1,859	1,847	1,724	2.6	-4.0	-0.7
Chest	583	578	562	509	466	-0.7	-2.8	-9.5
Musculoskeletal	446	432	424	400	400	-3.1	-1.9	-5.5
Breast	169	193	192	173	165	13.9	-0.2	-10.3
GI Tract	190	177	171	137	122	-6.4	-3.5	-20.2
Nuclear Medicine	286	331	352	405	371	15.8	6.5	15.0
Other	216	226	222	223	200	4.6	-1.8	0.6
Advanced Imaging	868	893	931	942	977	2.9	4.3	1.2
Cat Scan - Head	202	194	171	166	156	-3.9	-11.8	-3.5
Cat Scan - Other	411	426	411	407	403	3.8	-3.6	-1.0
MRI - Brain	112	111	162	172	185	-0.2	45.3	6.1
MRI - Other	143	161	187	199	234	12.4	16.5	6.1
Sonography	979	1,069	1,140	1,258	1,287	9.2	6.6	10.3
Echo-Eye	103	97	103	96	94	-6.6	6.9	-7.4
Echo-Abdomen/Pelvis	191	200	191	198	199	4.5	-4.1	3.2
Echo-Heart	496	569	620	716	733	14.6	8.9	15.5
Carotid Artery	127	139	131	138	134	9.3	-5.2	5.4
Prostate	16	17	22	22	21	8.5	30.2	-2.0
Other	46	49	72	89	108	5.9	48.1	23.1
Imaging/Procedure	653	730	714	679	417	11.8	-2.2	-4.9
Proc, Incl Card Cath	454	528	543	510	262	16.3	3.0	-6.2
Proc Other	199	202	170	169	156	1.7	-15.8	-0.6

* = Data for 1994 are incomplete

Source: 5 percent BMAD for 1990 and 1991; 1992 and later - Monitoring System.

Table V-4

Medicare Allowed Charges for Physician Services Covered by the Medicare Fee Schedule

Imaging: 1990 to 1994

Service Category	1990	1991	1992	1993	1994*	1990-91	1991-92	1992-93
	Allowed Charges in millions					Percent Change		
Total	$4,389	$4,629	$4,644	$4,726	$4,406	5.5	0.3	1.8
Standard Imaging	1,889	1,937	1,859	1,847	1,724	2.6	-4.0	-0.7
Chest	583	578	562	509	466	-0.7	-2.8	-9.5
Musculoskeletal	446	432	424	400	400	-3.1	-1.9	-5.5
Breast	169	193	192	173	165	13.9	-0.2	-10.3
GI Tract	190	177	171	137	122	-6.4	-3.5	-20.2
Nuclear Medicine	286	331	352	405	371	15.8	6.5	15.0
Other	216	226	222	223	200	4.6	-1.8	0.6
Advanced Imaging	868	893	931	942	977	2.9	4.3	1.2
Cat Scan - Head	202	194	171	166	156	-3.9	-11.8	-3.5
Cat Scan - Other	411	426	411	407	403	3.8	-3.6	-1.0
MRI - Brain	112	111	162	172	185	-0.2	45.3	6.1
MRI - Other	143	161	187	199	234	12.4	16.5	6.1
Sonography	979	1,069	1,140	1,258	1,287	9.2	6.6	10.3
Echo-Eye	103	97	103	96	94	-6.6	6.9	-7.4
Echo-Abdomen/Pelvis	191	200	191	198	199	4.5	-4.1	3.2
Echo-Heart	496	569	620	716	733	14.6	8.9	15.5
Carotid Artery	127	139	131	138	134	9.3	-5.2	5.4
Prostate	16	17	22	22	21	8.5	30.2	-2.0
Other	46	49	72	89	108	5.9	48.1	23.1
Imaging/Procedure	653	730	714	679	417	11.8	-2.2	-4.9
Proc, Incl Card Cath	454	528	543	510	262	16.3	3.0	-6.2
Proc Other	199	202	170	169	156	1.7	-15.8	0.6

* = Data for 1994 are incomplete

Source: 5 percent BMAD for 1990 and 1991; 1992 and later - Monitoring System.

Table V-5

Medicare Physician Services Covered by the Medicare Fee Schedule

Visits and Consultations: 1990 to 1994

Service Category	1990	1991	1992	1993	1994*	1990-91	1991-92	1992-93
	Rate per 1,000 Beneficiaries					Percent Change		
Total	11,024	11,978	12,054	12,318	11,383	8.7	0.6	2.2
Office Visits	4,762	5,219	5,209	5,367	5,151	9.6	-0.2	3.1
New	332	358	361	360	332	7.8	0.9	-0.5
Established	4,430	4,861	4,847	5,008	4,818	9.7	-0.3	3.3
Hospital Visits	3,250	3,382	3,154	3,148	2,701	4.1	-6.7	-0.2
Initial	270	282	266	282	250	4.5	-5.7	6.0
Subsequent	2,674	2,768	2,776	2,762	2,366	3.5	0.3	-0.5
Critical Care	305	331	112	104	85	8.4	-66.1	-7.3
Emergency Room	357	389	374	402	367	8.8	-3.9	7.5
Home/Nursing Home	482	528	558	582	521	9.5	5.7	4.2
Home	47	47	40	40	35	-0.3	-15.5	1.8
Nursing Home	435	481	519	541	486	10.6	7.8	4.4
Specialists	1,417	1,608	1,710	1,772	1,715	13.4	6.4	3.6
Pathology	357	399	449	458	412	11.9	12.5	1.8
Psychiatry	276	329	434	488	460	19.1	32.0	12.4
Ophthalmology	644	710	620	646	647	10.2	-12.7	4.3
Other	140	169	207	180	195	20.7	22.4	-12.8
Consultation	422	469	655	657	604	11.1	39.6	0.4
Chiropractic	333	384	395	390	326	15.2	2.8	-1.3

* = Data for 1994 are incomplete

Source: 5 percent BMAD for 1990 and 1991; 1992 and later - Monitoring System

Medicare Denominator files: 1990 to 1994

Table V-6
Medicare Physician Services Covered by the Medicare Fee Schedule
Procedures: 1990 to 1994

Service Category	1990	1991	1992	1993	1994*	1990-91	1991-92	1992-93
	Rate per 1,000 Beneficiaries					Percent Change		
Major Procedure: General								
Breast **	4.1	4.8	4.2	4.0	3.6	18.0	-13.0	-4.4
Colectomy	4.4	4.4	4.4	4.3	3.8	0.3	-0.1	-2.8
Cholecystectomy	4.8	3.8	3.0	2.6	2.1	-21.8	-20.5	-14.5
TURP **	17.7	18.2	16.5	14.3	11.3	2.8	-9.6	-13.1
Hysterectomy **	2.6	3.3	3.4	3.2	2.9	29.0	4.4	-5.4
Disc Surgery	3.6	4.6	4.9	4.8	2.8	28.2	7.1	-2.4
Other	58.5	62.5	64.9	68.0	62.5	6.9	3.7	4.8
Major Procedure: Cardiovascular								
CABG	4.7	5.5	5.9	5.9	4.9	17.4	7.0	-0.4
Aneurysm	1.0	1.2	1.1	1.1	1.0	13.4	-7.6	1.1
Thromboendarterectomy	1.5	2.0	2.2	2.2	2.2	37.2	8.5	-0.8
PTCA	3.8	5.5	6.2	6.6	5.5	45.4	13.7	6.2
Pacemaker	5.9	6.4	6.1	6.1	5.5	8.0	-3.7	0.1
Other	71.8	75.0	86.4	89.9	101.5	4.4	15.1	4.2
Major Procedure: Orthopedic								
Hip Fracture Repair	6.2	6.5	6.6	6.7	6.1	5.2	0.9	2.4
Hip Replacement	3.1	3.6	3.5	3.4	3.2	13.6	-1.8	-1.8
Knee Replacement	3.3	3.8	4.1	4.3	4.2	16.3	9.0	3.3
Other	13.7	15.2	15.6	16.6	14.4	10.6	2.8	6.6

* = Data for 1994 are incomplete

** Breast and hysterectomy rates are based on female enrollment. TURP rates are based on male enrollment.

SOURCES: 5 percent BMAD for 1990 and 1991; 1992 and later - Monitoring System.. Medicare Denominator files: 1990 to 1994.

Table V-6 (Continued)
Medicare Physician Services Covered by the Medicare Fee Schedule
Procedures: 1990 to 1994

Service Category	1990	1991	1992	1993	1994*	1990-91	1991-92	1992-93
	Rate per 1,000 Beneficiaries					Percent Change		
Major Procedure: Eye								
Corneal Transplant	0.7	0.8	0.7	0.7	0.6	19.8	-14.0	-4.3
Cat Rem/Lens Insert	36.1	46.7	45.8	42.1	41.8	29.3	-2.0	-8.2
Retinal Detachment	1.9	2.0	1.9	1.9	1.7	7.1	-6.3	-1.5
Treatm Retinal Lesions	7.4	9.0	8.2	8.6	8.4	20.4	-8.1	4.3
Other	35.7	45.7	42.2	42.5	40.6	28.0	-7.7	0.8
Ambulatory Procedures:								
Skin	112	130	110	105	95	15.6	-15.2	-4.7
Musculoskeletal	22	25	22	22	20	17.8	-14.1	-0.9
Hernia Repair	5	6	6	6	4	14.1	-3.0	-0.4
Lithotripsy	1	1	1	1	1	-8.1	1.8	6.0
Other	74	86	86	90	80	15.6	0.4	4.0
Minor Procedures:								
Skin	687	775	867	885	472	12.8	11.9	2.0
Musculoskeletal	142	158	147	154	149	11.4	-6.9	4.6
Other	536	661	669	690	690	23.4	1.2	3.2
Oncology								
Radiation Therapy	136	185	269	265	235	36.0	45.7	-1.7
Other	85	98	99	117	122	15.6	0.5	18.5

* = Data for 1994 are incomplete

** Breast and hysterectomy rates are based on female enrollment. TURP rates are based on male enrollment.

SOURCES: 5 percent BMAD for 1990 and 1991; 1992 and later - Monitoring System. Medicare Denominator files: 1990 to 1994.

Table V-6 (Continued)
Medicare Physician Services Covered by the Medicare Fee Schedule
Procedures: 1990 to 1994

Service Category	1990	1991	1992	1993	1994*	1990-91	1991-92	1992-93
	Rate per 1,000 Beneficiaries					Percent Change		
Endoscopy								
Arthroscopy	2.7	3.5	3.8	4.1	4.1	28.6	8.6	7.9
Upper GI Endoscopy	37.7	44.4	45.5	46.8	45.6	17.7	2.6	2.8
Signoidoscopy	42.9	43.5	39.2	35.7	31.1	1.5	-10.0	-8.9
Colonoscopy	32.6	40.0	42.1	43.8	42.5	22.5	5.3	4.0
Cystoscopy	39.3	43.7	42.8	43.2	40.3	11.4	-2.1	0.9
Broncoscopy	8.7	9.8	9.5	9.3	8.3	12.8	-3.9	-2.1
Laparoscopic Cholecystectomy	0.1	2.9	3.9	4.1	3.9	2091.3	35.4	4.5
Laryngoscopy	8.1	9.2	9.4	9.6	9.5	12.4	2.4	2.7
Other	12.9	15.2	15.8	16.4	16.6	17.6	3.9	4.0
Dialysis	32	37	41	43	39	14.6	11.7	3.6
Tests								
Other	90	84	130	143	130	-6.7	54.5	9.7
Electrocardiograms	1,022	1,093	365	377	927	7.0	-66.6	3.4
Cardiov Stress Tests	43	51	56	60	71	19.5	10.7	6.1
EKG Monitoring	45	48	54	49	42	5.3	12.0	-9.0
Anesthesia	6,133	16,003	265	266	250	161.0	-98.3	0.5

* = Data for 1994 are incomplete

** Breast and hysterectomy rates are based on female enrollment. TURP rates are based on male enrollment.

SOURCES: 5 percent BMAD for 1990 and 1991; 1992 and later - Monitoring System. Medicare Denominator files: 1990 to 1994.

Table V-9

Medicare Physician Services Covered by the Medicare Fee Schedule

Procedures: 1990 to 1994

Aged Medicare Beneficiaries, by Race

Service Category	1990	1991	1992	1993	1994*
	Ratio of Black Rate to White Rate				
Major Procedure: General					
Breast **	0.85	0.62	0.68	0.69	0.69
Colectomy	0.77	0.81	0.85	0.86	0.86
Cholecystectomy	0.62	0.54	0.72	0.75	0.76
TURP **	0.97	0.93	0.99	1.02	1.05
Hysterectomy **	0.59	0.50	0.58	0.63	0.60
Disk Surgery	0.47	0.45	0.50	0.49	0.51
Other	0.84	0.85	0.88	0.88	0.89
Major Procedure: Cardiovascular					
CABG	0.23	0.29	0.35	0.36	0.41
Aneurysm	0.30	0.38	0.35	0.36	0.37
Thromboendarterectomy	0.28	0.34	0.30	0.30	0.31
PTCA	0.33	0.42	0.42	0.43	0.46
Pacemaker	0.75	0.80	0.78	0.75	0.76
Other	0.98	1.06	1.03	1.03	0.98
Major Procedure: Orthopedic					
Hip Fracture Repair	0.36	0.40	0.41	0.42	0.41
Hip Replacement	0.45	0.42	0.49	0.48	0.48
Knee Replacement	0.61	0.56	0.62	0.62	0.60
Other	1.02	0.99	0.97	0.94	0.97

* = 1994 data are incomplete

** Breast and hysterectomy rates are based on female enrollment. TURP rates are based on male enrollmen

SOURCES: 5 percent BMAD for 1990 and 1991; 1992 and later - Monitoring System.

Medicare Denominator files: 1990 to 1994.

Table V-9 (Continued)
Medicare Physician Services Covered by the Medicare Fee Schedule
Procedures: 1990 to 1994
Aged Medicare Beneficiaries, by Race

Service Category	1990	1991	1992	1993	1994*
	Ratio of Black Rate to White Rate				
Major Procedure: Eye					
Corneal Transplant	0.63	0.89	0.86	0.84	0.88
Cat Rem/Lens Insert	0.80	0.80	0.78	0.77	0.77
Retinal Detachment	0.65	0.61	0.60	0.62	0.63
Treatm Retinal Lesions	1.61	1.64	1.52	1.56	1.54
Other	0.99	1.06	1.08	1.05	1.05
Ambulatory Procedures:					
Skin	0.39	0.51	0.39	0.40	0.38
Musculoskeletal	0.66	0.72	0.68	0.67	0.66
Hernia Repair	0.45	0.48	0.52	0.51	0.52
Lithotripsy	0.58	0.50	0.63	0.57	0.59
Other	0.81	0.84	0.86	0.88	0.87
Minor Procedures:					
Skin	0.60	0.61	0.56	0.55	0.65
Musculoskeletal	0.87	0.90	0.83	0.82	0.83
Other	0.72	0.68	0.67	0.70	0.74
Oncology					
Radiation Therapy	0.92	0.95	0.87	0.95	0.93
Other	0.63	0.75	0.85	0.86	0.91

* = 1994 data are incomplete

SOURCES: 5 percent BMAD for 1990 and 1991; 1992 and later - Monitoring System.
Medicare Denominator files: 1990 to 1994.

Table V-9 (Continued)
Medicare Physician Services Covered by the Medicare Fee Schedule
Procedures: 1990 to 1994
Aged Medicare Beneficiaries, by Race

Service Category	1990	1991	1992	1993	1994*
	Ratio of Black Rate to White Rate				
Endoscopy					
Arthroscopy	0.32	0.37	0.41	0.38	0.40
Upper GI Endoscopy	1.01	1.03	1.02	1.01	0.99
Signoidoscopy	0.57	0.61	0.58	0.58	0.60
Colonoscopy	0.84	0.87	0.84	0.85	0.85
Cystoscopy	0.66	0.73	0.69	0.68	0.68
Broncoscopy	0.99	0.99	1.01	1.04	1.02
Laparoscopic Cholecystectomy	0.54	0.51	0.53	0.54	0.56
Laryngoscopy	0.89	0.96	0.98	0.97	0.94
Other	0.77	0.73	0.76	0.72	0.71
Dialysis	1.90	3.17	2.46	2.63	2.67
Tests					
Other	1.13	0.98	1.00	0.97	0.99
Electrocardiograms	1.04	1.03	0.85	0.85	1.05
Cardiov Stress Tests	0.53	0.58	0.56	0.59	0.62
EKG Monitoring	1.07	1.08	1.09	1.12	1.12

* = 1994 data are incomplete

SOURCES: 5 percent BMAD for 1990 and 1991; 1992 and later - Monitoring System.
Medicare Denominator files: 1990 to 1994.

Table V-9
Medicare Physician Services Covered by the Medicare Fee Schedule
Procedures: 1990 to 1994
Aged Medicare Beneficiaries, by Race

Service Category	1990	1991	1992	1993	1994*
	Ratio of Black Rate to White Rate				
Major Procedure: General					
Breast **	0.85	0.62	0.68	0.69	0.69
Colectomy	0.77	0.81	0.85	0.86	0.86
Cholecystectomy	0.62	0.54	0.72	0.75	0.76
TURP **	0.97	0.93	0.99	1.02	1.05
Hysterectomy **	0.59	0.50	0.58	0.63	0.60
Disk Surgery	0.47	0.45	0.50	0.49	0.51
Other	0.84	0.85	0.88	0.88	0.89
Major Procedure: Cardiovascular					
CABG	0.23	0.29	0.35	0.36	0.41
Aneurysm	0.30	0.38	0.35	0.36	0.37
Thromboendarterectomy	0.28	0.34	0.30	0.30	0.31
PTCA	0.33	0.42	0.42	0.43	0.46
Pacemaker	0.75	0.80	0.78	0.75	0.76
Other	0.98	1.06	1.03	1.03	0.98
Major Procedure: Orthopedic					
Hip Fracture Repair	0.36	0.40	0.41	0.42	0.41
Hip Replacement	0.45	0.42	0.49	0.48	0.48
Knee Replacement	0.61	0.56	0.62	0.62	0.60
Other	1.02	0.99	0.97	0.94	0.97

* = 1994 data are incomplete

** Breast and hysterectomy rates are based on female enrollment. TURP rates are based on male enrollmen

SOURCES: 5 percent BMAD for 1990 and 1991; 1992 and later - Monitoring System.
Medicare Denominator files: 1990 to 1994.

Table V-9 (Continued)
Medicare Physician Services Covered by the Medicare Fee Schedule
Procedures: 1990 to 1994
Aged Medicare Beneficiaries, by Race

Service Category	1990	1991	1992	1993	1994*
	Ratio of Black Rate to White Rate				
Major Procedure: Eye					
Corneal Transplant	0.63	0.89	0.86	0.84	0.88
Cat Rem/Lens Insert	0.80	0.80	0.78	0.77	0.77
Retinal Detachment	0.65	0.61	0.60	0.62	0.63
Treatm Retinal Lesions	1.61	1.64	1.52	1.56	1.54
Other	0.99	1.06	1.08	1.05	1.05
Ambulatory Procedures:					
Skin	0.39	0.51	0.39	0.40	0.38
Musculoskeletal	0.66	0.72	0.68	0.67	0.66
Hernia Repair	0.45	0.48	0.52	0.51	0.52
Lithotripsy	0.58	0.50	0.63	0.57	0.59
Other	0.81	0.84	0.86	0.88	0.87
Minor Procedures:					
Skin	0.60	0.61	0.56	0.55	0.65
Musculoskeletal	0.87	0.90	0.83	0.82	0.83
Other	0.72	0.68	0.67	0.70	0.74
Oncology					
Radiation Therapy	0.92	0.95	0.87	0.95	0.93
Other	0.63	0.75	0.85	0.86	0.91

* = 1994 data are incomplete

SOURCES: 5 percent BMAD for 1990 and 1991; 1992 and later - Monitoring System.
Medicare Denominator files: 1990 to 1994.

Table V-9 (Continued)
Medicare Physician Services Covered by the Medicare Fee Schedule
Procedures: 1990 to 1994
Aged Medicare Beneficiaries, by Race

Service Category	1990	1991	1992	1993	1994*
	Ratio of Black Rate to White Rate				
Endoscopy					
Arthroscopy	0.32	0.37	0.41	0.38	0.40
Upper GI Endoscopy	1.01	1.03	1.02	1.01	0.99
Signoidoscopy	0.57	0.61	0.58	0.58	0.60
Colonoscopy	0.84	0.87	0.84	0.85	0.85
Cystoscopy	0.66	0.73	0.69	0.68	0.68
Broncoscopy	0.99	0.99	1.01	1.04	1.02
Laparoscopic Cholecystectomy	0.54	0.51	0.53	0.54	0.56
Laryngoscopy	0.89	0.96	0.98	0.97	0.94
Other	0.77	0.73	0.76	0.72	0.71
Dialysis	1.90	3.17	2.46	2.63	2.67
Tests					
Other	1.13	0.98	1.00	0.97	0.99
Electrocardiograms	1.04	1.03	0.85	0.85	1.05
Cardiov Stress Tests	0.53	0.58	0.56	0.59	0.62
EKG Monitoring	1.07	1.08	1.09	1.12	1.12

* = 1994 data are incomplete

SOURCES: 5 percent BMAD for 1990 and 1991; 1992 and later - Monitoring System.
Medicare Denominator files: 1990 to 1994.

Table V-10
Medicare Physician Services Covered by the Medicare Fee Schedule
Imaging: 1990 to 1994
Aged Medicare Beneficiaries, By Race

Service Category	1990	1991	1992	1993	1994*
	Ratio of Black Rate to White Rate				
Standard Imaging					
Chest	1.04	1.05	1.07	1.09	1.09
Musculoskeletal	0.80	0.79	0.78	0.78	0.78
Breast **	0.60	0.59	0.63	0.65	0.68
GI Tract	1.06	1.07	1.07	1.08	1.09
Nuclear Medicine	0.95	0.95	0.93	0.91	0.95
Other	1.12	1.12	1.22	1.23	1.25
Advanced Imaging					
Cat Scan - Head	1.28	1.28	1.30	1.33	1.32
Cat Scan - Other	0.96	0.97	0.96	0.96	0.95
MRI - Brain	0.75	0.84	0.84	0.86	0.86
MRI - Other	0.70	0.67	0.72	0.73	0.68
Sonography					
Echo-Eye	0.86	0.87	0.83	0.82	0.82
Echo-Abdomen/Pelvis	1.15	1.11	1.13	1.12	1.11
Echo- Heart	1.08	1.12	1.11	1.12	1.12
Carotid Artery	0.80	0.82	0.79	0.80	0.79
Prostate	0.70	0.72	0.78	0.94	1.04
Other	1.02	1.00	1.02	1.03	1.06
Imaging/Procedure					
Proc, Incl Card Cath	0.52	0.57	0.57	0.59	0.60
Proc Other	0.91	0.93	0.89	0.90	0.91

* = 1994 data are incomplete.

** Breast Imaging rates are based on female enrollment

SOURCES: 5 percent BMAD for 1990 and 1991; 1992 and later - Monitoring System.
Medicare Denominator files: 1990 to 1994

Figure V-1
Allowed Charges for MFS Services
1990 to 1994

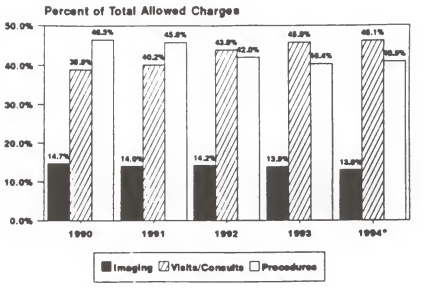
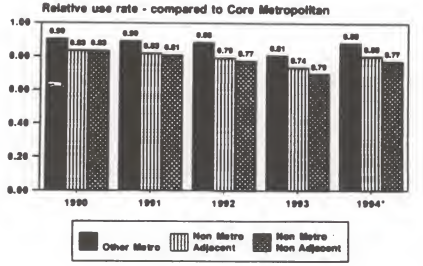


Figure V-2
Ambulatory Physician Visits per 1,000
by Metropolitan Designation, 1990-1994
All Medicare Beneficiaries



Sources: Data for 1990 and 1991 - 5 Percent BMAD; data for 1992 through 1994 - Part B Beneficiary Monitoring System.
*=Data for 1994 are incomplete.

Figure V-3
Ambulatory Physician Visits per 1,000
by PPR Ex Ante Impact Area, 1990-1994
All Medicare Beneficiaries

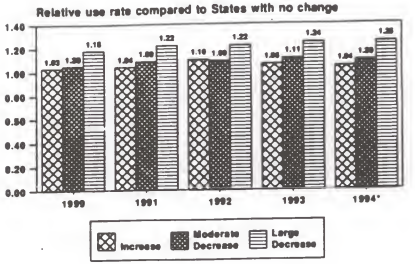
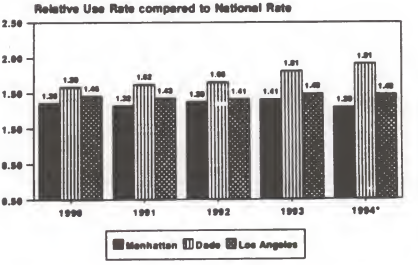
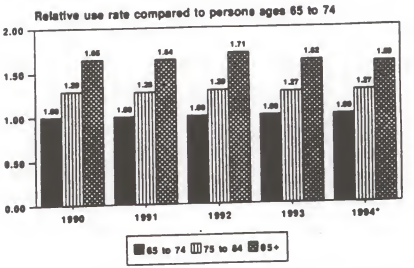


Figure V-4
Ambulatory Physician Visits per 1,000
by County, 1990-1994
All Medicare Beneficiaries



Sources: Data for 1990 and 1991 - 5 Percent BMAD; data for 1992 through 1994 - Part B Beneficiary Monitoring System.
*=Data for 1994 are incomplete.

Figure V-5
Ambulatory Physician Visits per 1,000
by Age 1990 to 1994
Aged Medicare Beneficiaries



Sources: Data for 1990 and 1991 - 5 Percent BMAD; data for 1992 through 1994 - Part B Beneficiary Monitoring System.
*=Data for 1994 are incomplete.

Appendix VI

Monitoring Part A

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Health Care Financing Administration

April 1995

Appendix VI

Monitoring Part A

INTRODUCTION

A result of the Medicare fee schedule (MFS) has been a shift in Medicare payments from surgical services to visits and consultations, as reported in the 1994 access report. It is important therefore to monitor access to care in this changing environment in order to examine whether such shifts have had a detrimental impact on access to care. The data presented here updates similar information in the 1994 report to Congress (HCFA, 1994). This appendix provides data on the use of surgical procedures performed in the hospital for white beneficiaries and for a subgroup of the Medicare population, black beneficiaries. The primary focus of this analysis is to compare procedure rates and the 30-day post-admission mortality rate, for white and black beneficiaries in 1990, the period just preceding the implementation of the MFS, and for 1993.

Recent studies have shown that utilization rates of procedures cannot be explained solely by the differences between white and black beneficiaries in the prevalence of specific clinical conditions. These studies have suggested that black beneficiaries experience barriers to access (Health Care Financing Administration (HCFA), 1990; HCFA, 1992; HCFA, 1993; HCFA, 1994; PPRC, 1990; Udvarhelyi, 1992; Whittle, 1993, Escarce, 1993).

Another measure we are using to interpret the relationship between race and access to services is the 30-day post-admission mortality rate (HCFA, 1990; HCFA, 1992; HCFA, 1993; HCFA, 1994). Differences in the mortality rate may reflect differences in access regarding when people enter the system (e.g., the severity of illness of the patient mix). Differences in post-admission death rates may indicate variations in the health status of the patient population by race. Health status at admission may vary among race groups due to reasons other than barriers to access. For example, research suggests that patterns of seeking care is related to race (Escarce, 1993). Additional patient behavioral characteristics that may influence health status at admission include: compliance with prescription medication regimen, alcohol use, tobacco use, and exercise habits. Variation among providers in patterns of care has been shown to be influenced by characteristics of the provider (e.g., graduate of a medical school in the United States or a foreign school) (Mitchell, 1982).

This report shows hospitalization rates for black and white beneficiaries for 18 major procedures performed in 1990 and 1993. The procedures were selected for their frequency, lack of agreement about their outcomes and effectiveness, or cost. The procedures include newer, "high tech" ones, such as percutaneous transluminal coronary angioplasty (PTCA), coronary artery bypass graft (CABG) surgery, and total knee replacement, and more traditional procedures, such as appendectomy and inguinal hernia repair.

METHODS

Source of Data

Data was derived from the Medicare Provider Analysis and Review (MEDPAR) file, for the two calendar years, 1990 and 1993. The MEDPAR file for each year contains one record for each Medicare-covered stay in a short-stay hospital, with a date of discharge in that year. Each record contains dates of admission and discharge, up to five diagnoses in 1990 and ten diagnoses in 1993, up to three procedures in 1990 and six procedures in 1993. (The first listed is the principal diagnosis--the condition established after study to be chiefly responsible for occasioning the admission of the patient to the hospital.) Diagnoses and procedures are coded using the International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM). Technical Note A at the end of this appendix contains the codes used to identify procedures described in the tables. (In calculating the 1993 cholecystectomy rate, the code designating a laparoscopic procedure, ICD-9-CM 51.23 was added.) Date of death, obtained from Medicare enrollment files, is appended to the record to track after discharge from the hospital. Hospital stay records from the Medicare beneficiaries enrolled in health maintenance organizations (HMOs), are incomplete, therefore, records from HMO enrollees (about 15 percent of all beneficiaries) were eliminated from the files.

Measures

A procedure was counted if it appeared in any of the fields reserved on the record for MEDPAR procedures. Rates per 1,000 Medicare beneficiaries were age and sex adjusted by the direct method, using the 1986 age-sex composition of the Medicare population as the standard.

The 30-day post-admission death rate is the rate of death within 30 days of admission per 1,000 discharges. The 30-day post-admission death rates for each procedure were also age and sex adjusted by the direct method, using the 1986 distribution of discharges for that procedure as the standard.

RESULTS

The following tables present discharge rates per 1,000 Medicare enrollees and 30-day post-admission death rates per 1,000 discharges for all procedures selected for this analysis. The procedures are displayed within three groups; heart and vascular procedures, orthopedic and back procedures, and other procedures.

The first group, shown in Table VI-1, heart and vascular procedures, includes one diagnostic procedure (cardiac catherization) and three surgical procedures: PTCA, CABG, and carotid endarterectomy. These three surgical procedures are relatively discretionary therapeutic cardiovascular procedures (HCFA, 1994). In 1990, the rate for CABG procedures among white beneficiaries (3.64 procedures per 1,000 enrollees) was substantially higher than the rate for black beneficiaries (1.34 per 1,000 enrollees). In 1993 the rates for CABG procedures in the two race

groups increased (4.67 per 1,000 white enrollees and 1.90 per 1,000 black enrollees) Increases were also seen in PTCA and carotid endarterectomy procedure rates for both races.

The black:white ratio for the three surgical procedure rates increased between 1990 and 1993, as shown in Table VI-1 (from 0.40 to 0.46 for PTCA, from 0.37 to 0.41 for CABG, and from 0.30 to 0.31 for carotid endarterectomy). It is interesting to note that during this period the rate of PTCA overtook the rate of CABG.

In 1993, the 30-day post-admission death rate for the black:white ratios were relatively close to 1:1.05 for PTCA, 1.09 for CABG, and 0.90 for carotid endarterectomy. The most dramatic change in black:white mortality ratios between 1990 and 1993 occurred for carotid endarterectomy (from 1.28 in 1990 to 0.90 in 1993). The decline in the 30-day post-admission ratio between black and white beneficiaries indicates that mortality decreased substantially in the black population (in 1990 the rate was 23.66 deaths per 1,000 discharges and in 1993, 14.29 deaths per 1,000 discharges).

Information for seven orthopedic and back procedures are displayed in Table VI-2. The rate for all these surgical procedures increased between 1990 and 1993, among beneficiaries in both race groups. Since 1990, the black:white procedure ratio increased for three of the seven procedures: reduction of fracture of the femur (from 0.42 to 0.45); total knee replacement (from 0.62 to 0.64); and total hip replacement (from 0.45 to 0.48). There were small declines in the black:white ratio for laminectomy, excision of disk, and spinal fusion. Thus compared to 1990, a relatively larger number of white beneficiaries in 1993 had these procedures than black beneficiaries.

A large decrease occurred between 1990 and 1993 in 30-day post-admission mortality rates among black beneficiaries for total knee replacement (from 8.75 deaths per 1,000 discharges to 5.44 deaths per 1,000 discharges) and for excision of disk and (from 15.48 deaths per 1,000 discharges to 9.26 deaths per 1,000 discharges. With regard to total knee replacement, the relatively large decline in the post-admission death rate is reflected in the drop in the black:white ratio from 1.47 in 1992 to 1.25 in 1993 (HCFA, 1994).

The seven procedures shown in Table VI-3 include commonly performed surgical procedures among Medicare beneficiaries. The black:white ratios for all seven procedures increased between 1990 and 1993. Black beneficiaries were slightly more likely than white beneficiaries to undergo a prostatectomy in 1993 (17.00 per 1,000 white enrollees and 17.71 per 1,000 black enrollees). White beneficiaries had a higher rate for the six other procedures than black beneficiaries in 1993. The higher rate among white beneficiaries for cholecystectomy, repair of inguinal hernia, mastectomy, hysterectomy, appendectomy, and incidental appendectomy was true in 1990 as well as in 1993. The cholecystectomy rates reflect the inclusion of laparoscopic cholecystectomy in the calculation of the 1990 and 1993 rates. Thus, while the 1994 access report showed that rates of non-laparoscopic cholecystectomies decreased in both race groups between 1990 and 1992, the addition of those performed laparoscopically accounts for some of the increase in the cholecystectomy rates among black and white beneficiaries between 1990 and 1993 (HCFA,

1994). The rate of hysterectomy increased more than 6 percent between 1990 and 1993 in black beneficiaries, in contrast to less than 1 percent between 1990 and 1992 (HCFA, 1994). There were no changes in rates for appendectomy and incidental appendectomy among white beneficiaries during the 3 year time period, while the rates increased among the black beneficiaries (a 6 percent increase for appendectomy and an 11 percent increase for incidental appendectomy). As a result, black beneficiaries were almost as likely to undergo an incidental appendectomy as whites (black:white ratio of 0.93).

The 30-day post-admission mortality rate was greater among black beneficiaries per 1,000 discharges than among white beneficiaries for all procedures except repair of inguinal hernia in 1993 for which the death rate is slightly less in the black group (black:white ratio is 0.98). The black:white mortality ratio increased between 1990 and 1993 for prostatectomy, cholecystectomy, and mastectomy (from 1.18 to 1.34, from 1.33 to 1.42, and from 1.54 to 1.79, respectively). A dramatic decrease of almost 40 percent in the mortality rate following hysterectomy in black women occurred between 1990 and 1993, from 16.41 deaths per 1,000 discharges to 9.85 deaths per 1,000 discharges.

DISCUSSION

This appendix updates the information presented in the 1994 access report which provided data examining racial differences in procedures, following the implementation of the MFS (HCFA, 1994).

A comparison of 1990 and 1993 data, shows an increase in the black:white ratio of procedure rates for 14 of the 18 procedures. Decreases in the ratio occurred for four orthopedic and back procedures: other arthroplasty of hip, laminectomy, excision of disk, and spinal fusion. Thus, a pattern of diminishing disparity between black and white beneficiaries found in the previous analysis continued through 1993 (HCFA, 1994). However, white persons are still at least twice as likely to undergo five of the orthopedic and back procedures and three of the four heart and vascular procedures than are black persons. Some of the differences in the rates for these procedures may be attributed to the fact that PTCA, CABG surgery, carotid endarterectomy, and total hip replacement, are designated as "referral sensitive" procedures (HCFA, 1994).

However, from 1992 to 1993, the ratio of procedure rates between black and white beneficiaries continues to increase for cardiac catherization, PTCA, and CABG, suggesting that racial disparities for each of these procedures is still diminishing. The fall in the black:white death ratio for carotid endarterectomy (1.28 in 1990 to 0.90 in 1993) is due to the decrease in the death rate in both race groups, but particularly the lower death rate in black beneficiaries (23.66 deaths per 1,000 discharges in 1990 to 14.29 deaths per 1,000 discharges in 1993). This may be due to changes in the selection of patients who undergo the procedure as a result of greater access to, and screening by, primary care practitioners among black beneficiaries. Thus, data suggest that less severely ill black patients are treated less frequently.

In self-reports of joint pain, a higher proportion of black beneficiaries reported knee pain and a higher proportion of white beneficiaries reported more joint pain occurring in the neck or back and hip (Figure 62, page 47 *Vital and Health Statistics*, NCHS, Series 3 No. 29). For reduction of fracture of the femur and other arthroplasty of the hip, the procedure rates and the 30-day post-admission mortality rate were substantially greater in white persons than in black persons in both years [1990 and 1992], very likely reflecting the higher incidence of osteoporosis and the greater severity of that illness in white beneficiaries (HCFA, 1994).

An overview of the 30-day post-admission death rate indicates that reductions in the black:white ratios have been maintained for all heart and vascular procedures, orthopedic and back procedures other than reduction of fracture of femur and total hip replacement, and four of the seven other selected surgical procedures. The black:white mortality ratio has increased for cholecystectomy, and for mastectomy. An explanation for the increase in these death ratios, is the difference in health status between the two race groups when they undergo the procedure. Thus, black beneficiaries may be at greater risk for adverse outcomes following these surgical procedures. However, this does not appear to be the case in the hysterectomy mortality rate among black beneficiaries, which is decreasing as their procedure rate increases.

In conclusion, the MFS does not appear to have exacerbated differences between black beneficiaries and white beneficiaries in access to procedures performed in the hospital. In fact, the changes found between 1990 and 1993 in both the procedure rates and the 30 day post-admission death rates suggest that access to these procedures has improved for black beneficiaries.

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Technical Note A

Surgical Procedure Category	ICD-9-CM Code
Appendectomy	47.0
Cardiac Catheterization	37.21-37.23
Carotid Endarterectomy	38.12
Cholecystectomy	51.21-51.23
Coronary Artery Bypass Graft	DRG 106, DRG 107
Excision of Disc	80.5-80.59
Hysterectomy	68.4-68.7
Laminectomy	03.09
Other Arthroplasty of the Hip	81.52
Mastectomy	
Partial	85.20, 85.22, 85.23
Simple	85.41-85.48
Percutaneous Transluminal Coronary Angioplasty	36.01, 36.02, 36.05
Prostatectomy	60.2-60.6
Reduction of Fracture of the Femur	79.05, 79.15, 79.25, 79.35
Repair of Inguinal Hernia	53.0-53.17
Simple and Radical Mastectomy	85.41-85.48
Spinal Fusion	81.0-81.09
Total Hip Replacement	81.51
Total Knee Replacement	81.54

Table VI-1

Comparison of age-adjusted rates of selected heart and vascular procedures in elderly black and white Medicare beneficiaries, and 30-day post-admission death rates, 1990 and 1993.

	Procedure rate							30-day post-admission death rate				
	1990			1993			Change	1990		1993		Change
	Number	Rate/* 1,000	Black/ white ratio	Number	Rate/* 1,000	Black/ white ratio	in rate, 1990-93 (Percent)	Rate/** 1,000	Black/ white ratio	Rate/** 1,000	Black/ white ratio	in rate, 1990 93 (Percent)
Cardiac catherization												
White	334,039	13.82	0.65	407,169	16.05	0.71	16.14	na	na	na	na	na
Black	18,689	8.97		24,198	11.32		26.20	na	na	na	na	na
Percutaneous transluminal coronary angioplasty												
White	88,594	3.56	0.40	134,083	5.29	0.46	48.60	23.88	1.16	25.70	1.05	7.62
Black	2,942	1.41		5,215	2.44		73.05	27.59		27.05		1.96
Coronary artery bypass graft												
White	90,749	3.64	0.37	118,217	4.67	0.41	28.30	32.87	1.28	39.92	1.09	21.45
Black	2,792	1.34		4,041	1.90		41.79	42.11		43.40		3.06
Cartoid endarectomy												
White	43,314	1.73	0.30	59,502	2.33	0.31	34.68	18.54	1.28	15.93	0.90	14.08
Black	1,090	0.52		1,550	0.72		38.46	23.66		14.29		39.60

* per 1,000 enrolees. ** per 1,000 discharges

na Not applicable because cardiac catherization is a diagnostic procedure that is often followed by a surgical procedure

SOURCE:

Table VI-2

Comparison of age-adjusted rates of selected orthopedic and back procedures in elderly black and white Medicare beneficiaries, and 30-day post-admission death rates, 1990 and 1993.

	Procedure rate							30-day post-admission death rate				
	1990			1993			Change	1990		1993		Change
	Number	Rate/* 1,000	Black/ white ratio	Number	Rate/* 1,000	Black/ white ratio	in rate, 1990-93 (Percent)	Rate/** 1,000	Black/ white ratio	Rate/** 1,000	Black/ white ratio	in rate, 1990-93 (Percent)
Reduction of fracture of femur												
White	121,773	4.76	0.42	133,815	4.97	0.45	4.41	58.28	0.78	59.36	0.82	1.85
Black	4,343	2.02		5,107	2.25		11.39	45.71		48.92		7.02
Other arthroplasty of hip												
White	62,945	2.46	0.47	72,701	2.71	0.46	10.16	55.88	0.95	58.68	0.79	5.01
Black	2,474	1.15		2,826	1.25		8.70	53.35		46.58		-12.69
Total knee replacement												
White	80,990	3.24	0.62	108,742	4.28	0.64	32.10	5.52	1.59	4.35	1.25	21.20
Black	4,256	2.02		5,917	2.72		34.65	8.75		5.44		-37.83
Total hip replacement												
White	63,260	2.52	0.45	67,134	2.62	0.48	3.97	14.71	1.05	12.02	1.64	18.29
Black	2,408	1.14		2,755	1.27		11.40	15.42		19.73		27.95
Laminectomy												
White	33,852	1.36	0.54	38,738	1.53	0.52	12.50	11.75	1.58	9.43	1.54	-19.74
Black	1,536	0.74		1,706	0.80		8.11	18.53		14.49		21.80
Excision of disk												
White	30,589	1.23	0.50	33,974	1.35	0.49	9.76	6.38	2.43	6.51	1.42	2.04
Black	1,289	0.62		1,401	0.66		6.45	15.48		9.26		40.18
Spinal fusion												
White	11,387	0.46	0.61	17,435	0.70	0.59	52.17	18.87	1.11	17.73	1.04	-6.04
Black	581	0.28		870	0.41		46.43	20.99		18.41		-12.29

* per 1,000 enrolees. ** per 1,000 discharges

SOURCE:

Table VI-3

Comparison of age-adjusted rates of selected surgical procedures in elderly black and white Medicare beneficiaries, and 30-day post-admission death rates, 1990 and 1993.

	Procedure rate							30-day post-admission death rate				
	1990			1993			Change	1990		1993		Change
	Number	Rate/* 1,000	Black/ white ratio	Number	Rate/* 1,000	Black/ white ratio	in rate, 1990-93 (Percent)	Rate/** 1,000	Black/ white ratio	Rate/** 1,000	Black/ white ratio	in rate, 1990 93 (Percent)
Prostatectomy												
White	226,416	22.41	0.91	176,706	17.00	1.04	-24.14	9.59	1.18	9.83	1.34	2.50
Black	16,911	20.44		14,858	17.71		-13.36	11.31		13.16		16.36
Cholecystectomy												
White	131,430	5.25	0.62	136,217	5.32	0.69	1.33	29.87	1.33	28.94	1.42	-3.11
Black	6,919	3.28		8,055	3.69		12.50	39.77		41.20		3.60
Repair of inguinal hernia												
White	59,174	2.34	0.72	34,968	1.33	0.88	-43.16	13.75	1.53	20.51	0.98	49.16
Black	3,489	1.68		2,510	1.17		-30.36	21.10		20.13		-4.60
Mastectomy												
White	54,284	3.61	0.75	47,102	3.09	0.82	-14.40	5.22	1.54	4.48	1.79	14.18
Black	3,491	2.72		3,376	2.53		-6.99	8.03		8.00		0.37
Hysterectomy												
White	51,258	3.46	0.63	52,324	3.50	0.67	1.16	7.40	2.22	7.36	1.34	0.54
Black	2,779	2.19		3,069	2.33		6.39	16.41		9.85		39.98
Appendectomy												
White	11,157	0.45	0.73	11,563	0.45	0.78	0.00	27.39	1.75	28.69	1.67	4.75
Black	691	0.33		764	0.35		6.06	47.84		47.91		0.15
Incidental Appendectomy												
White	10,635	0.43	0.84	11,043	0.43	0.93	0.00	30.74	1.46	39.05	1.13	27.03
Black	747	0.36		862	0.40		11.11	44.77		44.11		-1.47

* per 1,000 enrolees. ** per 1,000 discharges

SOURCE:

Appendix VII

Access to Physician Services for Vulnerable Beneficiaries: Impact of the Medicare Fee Schedule

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Appendix VII

Access to Physician Services for Vulnerable Beneficiaries: Impact of the Medicare Fee Schedule

INTRODUCTION

Data in Appendix VII was used to evaluate changes in access associated with the Medicare fee schedule (MFS), using 1991-93 hospital claims and 1991-92 physician claims. This appendix focuses on those subgroups of the Medicare population who may be particularly vulnerable to any shifts in the supply of physician services. These subgroups include:

- Residents of Health Professional Shortage Areas (HPSAs), and of rural areas more generally. These residents already may be experiencing some difficulties in obtaining physician services; do payment changes resulting from the MFS exacerbate this problem?

- Dual (Medicare-Medicaid) eligibles and other poor elderly. Because these patients are less financially remunerative, physicians may cut back on these patients first.

- Very old and disabled beneficiaries. Because these enrollees may need disproportionately more physician services, compared with relatively healthier Medicare enrollees, even small reductions in service could produce adverse outcomes.

- Black beneficiaries. For reasons that are not completely understood, black Medicare enrollees undergo many procedures at rates well below those of white enrollees. Is this utilization gap widened during the transition to the MFS?

Three types of access measures: outcomes, utilization, and financial impacts are presented. Outcomes are measured as ambulatory care sensitive (ACS) admissions or potentially avoidable hospitalizations. Utilization measures include rates of use for preventive services, visits, and high-tech diagnostic and therapeutic procedures. Measures of financial impact include per enrollee coinsurance and extra bill amounts, as well as assignment rates.

METHOD

Sample Design

A stratified random sampling design was used to: take advantage of the differential impacts of the MFS across geographic areas and to ensure adequate numbers of vulnerable beneficiaries. All geographic areas were categorized into six mutually exclusive groups based on their expected 1992 payment change under the MFS compared to the old system: (1) 8 percent or

greater reduction; (2) greater than or equal to a 5-percent reduction, but less than an 8 percent reduction, (3) greater than or equal to a 3-percent reduction, but less than a 5-percent reduction, (4) greater than or equal to a 1-percent reduction, but less than a 3-percent reduction, (5) between a 1-percent reduction (not inclusive) and a 2-percent increase (not inclusive), and (6) 2 percent or greater increase. Vulnerable beneficiaries included those living in urban and rural HPSAs, those living in urban and rural poverty areas, joint Medicaid-eligibles, black beneficiaries, the disabled, the "very old" (85 years of age or over), and residents of rural areas generally.

A sample of 2.7 million beneficiaries was drawn from the 1991 denominator file. Replacement samples of newly eligible beneficiaries were later added in 1992 and in 1993, respectively, using the same sampling criteria. A detailed description of the sample design can be found in Technical Note A.

Data Sources

The analysis in Appendix VII is based on three main data sources: the denominator file, The Medicare provider analysis and review (MedPAR) claims for acute hospital stays, and Part B physician and outpatient department claims. As discussed earlier, the denominator file was used to draw the sample; it also provided sociodemographic characteristics for each member of the sample. MedPAR claims were used to construct hospital admission rates and surgical rates. Part B claims were used to create a wide range of physician utilization measures, as well as summary expenditure data. At the time this appendix was prepared, denominator and MedPAR data were available for all 3 years of the study (1991-93); Part B claims were available only for 1991 and for 1992.

Measures and Statistical Tests

As previously stated, three types of access measures: outcomes; utilization; and financial impact are discussed in this appendix. Outcomes are measured as admission rates for ACS conditions. These admissions are considered outcomes because hospitalizations are potentially avoidable with timely and adequate outpatient care. If such admissions are higher for vulnerable populations than for comparison beneficiaries, this suggests that barriers to care may exist for these vulnerable subgroups. Billings and colleagues (1991) have developed a list of 24 ACS conditions applicable to adults based on principal diagnosis.
Utilization measures include rates of use for preventive services, visits, and high-tech diagnostic and therapeutic procedures. Measures of financial impact include per enrollee coinsurance and extra bill amounts, as well as assignment rates.

All rates were standardized for age and sex using the direct method. For comparisons of very old versus younger beneficiaries, the rates were standardized for sex only.

T-tests were used to determine the statistical significance of differences in rates across groups and over time. Because of the complex nature of the sample design, weighting and standard error adjustments were required

RESULTS

Outcome Measures of Access

Table VII-1 displays total ACS admission rates for each of the vulnerable population groups within each of the six payment change areas. Two types of statistical comparisons are shown. First, rates for each vulnerable population are compared with the appropriate comparison group; thus, residents of shortage areas, for example, are compared with those in nonshortage areas, black beneficiaries with white beneficiaries, etc. These comparisons are made within each of the 3 study years. Second, changes in rates are tested over time within each vulnerable group, e.g., residents of shortage areas from 1991 to 1993.

The higher ACS admission rates for vulnerable beneficiaries documented in 1991 persist throughout the study period. In 1993, as in 1991, beneficiaries living in poor areas were about one-third more likely to be hospitalized with an ACS condition compared with those in nonpoor areas, for example, and black beneficiaries were 40 percent more likely than were whites. Although the size of the differentials may vary, these differences in ACS admission rates can be seen in all payment change areas.

Very old and disabled beneficiaries were admitted with ACS conditions at about twice the rate of their younger, non-disabled counterparts. A large part of this differential may be due to their poorer health status; even with the best of outpatient care, these beneficiaries may be at increased risk of hospitalization. To the extent that some beneficiaries become eligible for Medicaid under the medically needy provisions, then poorer health status could be a partial factor in their disproportionately high rates. Poverty and residence in a shortage area may be other, important, factors too.

ACS admission rates rose significantly from 1991 to 1993 for all Medicare beneficiaries, although the size of the increase was relatively small overall (less than 5 percent). Increases were observed for both vulnerable and nonvulnerable subgroups. ACS admission rates did appear to increase disproportionately more for some vulnerable groups, notably residents of shortage areas and poor areas, (7.4 percent and 7.8 percent, respectively, versus 4.6 percent for all beneficiaries), but these increases were not observed in those areas with the greatest expected payment reductions. From data shown in Table VII-1 there appear to be clear differences in ACS admission rates across payment change areas. Rates were considerably lower in areas with greater payment reductions (5 percent or more). This suggests that these areas may differ in ways that affect access, but that are not fee schedule related.

Utilization Measures of Access

Visits and Consultations

Table VII-2 presents data on rates of outpatient visits by vulnerable groups and the expected size of the MFS payment change. Outpatient visits include visits in the physician's office and in an outpatient department or other ambulatory facility.

Utilization gaps noted in 1991 were found to persist in 1992. Residents of both urban and rural shortage areas, those living in poor rural areas, those who were black, and those living in rural areas generally all received significantly fewer outpatient visits compared with comparison beneficiaries. This may well be a factor in their higher rate of ACS admissions. (Lower outpatient visit rates for the very old simply may be due to their higher rate of nursing home placement; note the large number of nursing home visits per beneficiary for this group in Table VII-B-1 in Technical Note B).

Medicaid-eligible and disabled beneficiaries had significantly more ambulatory physician visits than did other beneficiaries, possibly, in part because of their poorer health status. High ACS admission rates for these beneficiaries would seem paradoxical, given their relatively greater numbers of outpatient visits. To avoid unnecessary hospitalizations, however, ambulatory care must be timely and adequate. Medicaid-eligible and disabled Medicare beneficiaries may have received a disproportionate share of those visits in hospital outpatient departments rather than in private physicians' offices. These settings typically cannot provide continuity of care and, particularly in public facilities, may fail to provide all needed services.

Overall, beneficiaries made significantly more outpatient visits in 1992 than in 1991, but the actual size of the increase was quite small (0.1 visit per beneficiary). Beneficiaries in vulnerable subgroups also experienced an increase in outpatient visits, with two notable exceptions: rural poor and Medicaid-eligibles (for whom there were no significant changes in utilization).

This increase in outpatient visit use was not shared across all payment change areas, however. In particular, outpatient visit rates fell significantly in areas with the greatest expected payment reductions (although the absolute magnitude of the change was quite small). These declines in visits were observed for most groups of beneficiaries, both vulnerable and comparison groups. Two vulnerable groups experienced no change in visits: residents of rural shortage areas and residents of rural poverty areas. Nevertheless, these groups appear to have especially limited access to physicians; they made only one-half as many outpatient visits compared with other beneficiaries.

While these results may at first raise concerns (a decline in outpatient visits in areas with the greatest payment reductions, while other areas generally enjoy an increase), several notes of caution must be emphasized. First, only 2 years of data are compared. Second, the absolute

magnitude of the change is small, about a tenth of a visit per beneficiary. Third, the visit levels in areas with the greatest expected payment reductions remained considerably higher than those in other areas 6.7 per beneficiary in 1992, compared with 4.8 to 5.5 elsewhere Fourth, visit rates in these areas fell for both vulnerable and non-vulnerable <Spelling> groups, indicating a more general trend (not access-related).

While outpatient visits generally increased from 1991 to 1992, emergency room (ER) utilization declined over the same 2 year period (Table VII-3). Within areas experiencing 5- to 8-percent payment reductions, however, several vulnerable groups experienced increases in ER use: residents of shortage areas and of poor areas, black beneficiaries, and Medicaid-eligibles. The absolute number of such visits was still relatively small for these groups, however.

There was a dramatic increase in the use of consultations, up 40 percent in 1992 over 1991 (Table VII-4) This increase was observed for virtually all groups in all areas. Except for rural area residents who received fewer consultations, beneficiaries in vulnerable subgroups received significantly more consultations than did their counterparts.

There was also a significant increase in nursing home visits, with beneficiaries 85 years of age and over (the group most likely to be residing in a nursing home) receiving almost 8 percent more visits in 1992 than in 1991 (see Table VII-B-1 in Technical Note B). This is particularly encouraging, given the historic reluctance of physicians to make such visits (Mitchell, 1982; Mitchell and Hewes, 1986)[1].

Preventive Services

Medicare covered three preventive services throughout the study period: screening mammography, Pap tests, and pneumococcal pneumonia vaccinations. (Influenza vaccination was added as a benefit in 1993.) Table VII-5 presents utilization rates for mammography. (A similar table for pneumococcal pneumonia can be found in Technical Note B, Table VII-B-3; Pap test is not included because of data irregularities.)

While there was no overall increase in mammography screening from 1991 to 1992 (Table VII-5), significant increases were observed for many of the vulnerable groups. Although mammography rates still remained significantly lower for all vulnerable subgroups, the apparent narrowing of the "gap" is encouraging. These increases were not observed across all areas, however, with mammography rates actually falling in areas with the greatest payment reduction (8 percent or more). However, these declines occurred both for females in vulnerable subgroups and for those in comparison groups. It, thus, is unlikely that this decline was fee schedule related. Given that 1991 mammography rates in these areas generally were

[1] An alternative explanation is that beneficiaries were more likely to be admitted to a nursing home and/or were more likely to stay there longer in 1992 However, it is likely that no such phenomenon occurred.

higher than those elsewhere and the fact that this test is covered only once every 2 years for most women, "regression to the mean" is apt to occur from one year to the next

Utilization of pneumococcal pneumonia vaccination declined from 1991 to 1992 (Table II-B-3). Similar patterns of declining use were observed for both vulnerable and nonvulnerable beneficiaries and in most payment change areas, and thus would not seem to be fee schedule related Since pneumococcal pneumonia vaccinations are once in a lifetime, an assessment of their use cannot fully be made with only 2 years of data.

Diagnostic Tests and Procedures

Utilization rates were calculated for eight diagnostic tests and procedures: echocardiography, cardiac catheterization, head computerized tomography (CT), brain magnetic resonance imaging (MRI), arthroscopy, upper gastrointestinal (GI) endoscopy, sigmoidoscopy, and colonoscopy. These data can be found in Tables VII-B-4 through VII-B-11 in Technical Note B. Key findings are:

- Rates of echocardiography use increased significantly nationwide, as well as in all payment change areas. Unlike many tests, utilization of this cardiac ultrasound procedure was significantly higher for most vulnerable beneficiaries (except for those from rural areas where rates were lower).

- Cardiac catheterization rates increased in all areas, except for those with the highest payment reductions. In these latter areas, there was a significant increase in use for residents of rural shortage and urban poverty areas, but a decrease among Medicaid-eligibles.

- While there were no overall changes in head CT scan use, rates declined significantly in areas with the greatest payment reductions. However, these declines were observed for both vulnerable and nonvulnerable beneficiaries. By contrast, use of an alternative imaging procedure, MRI of the brain, increased significantly in all payment change areas.

- Arthroscopy rates increased 25 percent nationally from 3.6 in 1991 to 4.5 per 1,000 beneficiaries in 1992, with significant gains for many vulnerable groups, particularly those residing in rural areas. Rates did not change for Medicaid-eligibles, the disabled, and the urban poor, however, while increasing significantly for their nonvulnerable counterparts.

- Although national rates of upper GI endoscopy were unchanged from 1991 to 1992, increases were observed for many vulnerable subgroups, including several whose utilization already exceeded that of their counterparts.

- From 1991 to 1992, sigmoidoscopy rates fell while those for colonoscopy (a more invasive, and more expensive, substitute) increased. These patterns generally were observed for all subgroups of beneficiaries and in all payment change areas.

Surgical Procedures

Rates of cataract surgery increased 30 percent from 1991 to 1992 (Table VII-6). Significant increases were observed for all beneficiary subgroups and for all payment change areas, except for that with the largest payment reduction (where there was no change overall). Within areas with the greatest expected payment reduction, residents of urban shortage areas and the very old experienced significant drops in cataract surgery utilization, but the disabled and rural residents enjoyed significant increases in use. Levels of use for vulnerable groups in these areas remained significantly below those of their nonvulnerable counterparts.

By using MedPAR records rather than Part B claims, a 3-year series of surgical rates were obtained. The 1991-93 trends in three referral-sensitive surgeries: coronary artery bypass graft (CABG) surgery, percutaneous transluminal coronary angioplasty (PTCA), and joint (hip and knee) replacements were examined. These data are found in Tables VII-B-12 through VII-B-14 in Technical Note B. Findings on these referral-sensitive surgeries are:

- There were no changes in CABG surgery rates from 1991 to 1993, either overall or by payment change area. Residents of poor rural areas, those who were black, and those who were very old experienced significant increases in bypass surgery, while disabled experienced declines in the rates for bypass surgery.

- Rates of PTCA increased significantly for all beneficiary subgroups and in many payment change areas, including those with the greatest expected payment reduction.

- Rates for joint (hip and knee) replacement also increased significantly from 1991 to 1993, both for beneficiaries generally and for most of the vulnerable subgroups. These increases appear to be concentrated in areas expected to experience little change or payment increases under the MFS.

Financial Liability

Physician payment reform may impact two sources of patient financial liability: Part B coinsurance and extra billing amounts. Both variables are expressed on a per beneficiary basis and adjusted for geographic differences in cost-of-living. The 1992 amounts were deflated by the 1991-1992 change in the all-item Consumer Price Index (CPI). This deflator was used, rather than a medical price index, as the focus was on beneficiary out-of-pocket amounts. Increases (decreases) in financial liability decrease (increase) the amount of money beneficiaries have to spend on other goods and services.

As seen in Table VII-7, Part B coinsurance liability fell significantly from 1991 to 1992, down 4.3 percent or $8.71 less per beneficiary (in adjusted 1991 dollars). This decline is not an artifact of the CPI deflator; copayment liability fell in nominal terms as well, per beneficiary copayment liability was $199.65 in 1992 (1992 dollars). Significant declines were observed in all payment change areas and for most groups of beneficiaries. Since coinsurance is 20 percent of the Part B-allowed charges, a fall in coinsurance liability means that Part B spending per beneficiary fell in 1992 as well. A decline in spending can be attributed to some combination of fewer services, lower fees for some services, and a changing mix of services.

Extra billing liability fell even more sharply from 1991 to 1992, down 35.6 percent or $12.85 less per beneficiary (Table VII-8). This decline can be attributed to two factors (in addition to the overall decline in Part B spending): greater restrictions on extra billing introduced with the fee schedule and increased assignment rates (as shown in Table VII-B-15 in Technical Note B). Declines in extra billing liability were enjoyed by beneficiaries in all payment change areas and all population subgroups.

CONCLUSION

Utilization increases were observed for many services during the study period, including outpatient visits, consultations, cardiac catheterization, cataract surgery, and PTCA. A few services showed no change over time (e.g., CABG surgery and head CT scans), while for several the rates actually declined (e.g., ER visits and sigmoidoscopy). As a rule, these changes were observed for both vulnerable and nonvulnerable beneficiaries and in all payment change areas. Thus, there was no evidence that these changes were fee-schedule related.

Significant differences between vulnerable and nonvulnerable beneficiaries persisted throughout the study period, however. Utilization rates for vulnerable beneficiaries remain significantly lower for many services.

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TABLE VII-1

AMBULATORY CARE SENSITIVE (ACS) HOSPITAL ADMISSION RATES BY MFS PAYMENT CHANGE AREAS AND VULNERABLE POPULATION GROUPS, 1991-1993 (age - sex adjusted admissions per 1,000 beneficiaries)

Vulnerable Population	MFS PAYMENT CHANGE AREAS																		ALL AREAS		
	Reduction 1			2			3			4			5			Increase 6					
	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993
Shortage Areas																					
All Shortage Combine	64.9 [a]	66.0 [a]	61.7 [a]	72.5 [a]	71.0 [a]	75.4 [ab]	86.5 [a]	85.9 [a]	90.0 [a]	66.1 [a]	70.4 [a]	73.1 [ab]	62.4	65.3	71.7 [ab]	74.1 [a]	72.3 [a]	78.1 [ab]	71.6 [a]	73.1 [a]	77.1 [ab]
Urban	65.0 [a]	66.2 [a]	61.8 [a]	79.0 [a]	78.5 [a]	84.1 [ab]	89.7 [a]	90.0 [a]	94.3 [a]	70.5 [a]	75.0 [a]	78.3 [ab]	70.1 [a]	72.0 [a]	78.9 [ab]	71.9 [a]	70.9	71.9	77.7 [a]	79.7 [a]	83.6 [ab]
Rural	58.8	58.9	52.8	52.4	46.9 [a]	49.9 [a]	66.5	61.5	64.9	63.9	62.8	64.3	58.6	62.2	66.4 [b]	75.2 [a]	73.2 [a]	81.3 [ab]	62.5	62.6	66.9 [ab]
Non-Shortage	49.0	47.5	47.4	53.6	53.8	56.0	64.4	64.6	65.3	59.9	59.7	63.9	61.4	62.7	65.6 [b]	66.2	66.2	70.6	60.6	61.0	63.5 [b]
Poor Areas																					
All Poor Combined	80.3 [a]	82.0 [a]	79.9 [a]	78.2 [a]	79.9 [a]	83.7 [ab]	84.7 [a]	84.5 [a]	88.1 [a]	72.7 [a]	74.6 [a]	82.3 [ab]	82.5 [a]	81.9 [a]	86.3 [ab]	84.9 [a]	85.8 [a]	88.3 [ab]	79.1 [a]	80.2 [a]	85.3 [ab]
Urban	80.7 [a]	82.4 [a]	80.3 [a]	75.0 [a]	78.0 [a]	82.6 [ab]	84.6 [a]	84.9 [a]	88.5 [a]	70.4 [a]	72.3 [a]	78.4 [ab]	75.5 [a]	77.5 [a]	85.4 [ab]	88.3	85.5	86.8	78.6 [a]	77.6 [a]	82.6 [ab]
Rural	58.3 [a]	59.4	40.4 [b]	80.9 [a]	101.0 [a]	97.1 [a]	84.1 [a]	81.7 [a]	86.0 [a]	86.2 [a]	89.7 [a]	104.5 [ab]	93.1 [a]	86.3 [a]	82.4 [a]	89.7 [a]	92.4 [a]	84.7 [ab]	86.2 [a]	86.6 [a]	84.9 [ab]
Non Poor	47.8	46.0	46.1	53.2	53.1	55.4	63.5	63.9	64.3	59.2	59.1	62.6	60.6	62.1	65.1 [b]	67.1	66.9	69.5	59.9	60.2	62.6 [b]
Races																					
Black	60.2 [a]	64.9 [a]	79.0 [a]	62.4 [a]	61.0 [a]	66.3 [ab]	91.9 [a]	93.0 [a]	86.6 [ab]	61.1 [a]	64.3 [a]	66.6 [ab]	62.5 [a]	64.5 [a]	68.2 [ab]	90.8 [a]	91.9 [a]	89.3 [ab]	64.2 [a]	66.1 [a]	69.6 [ab]
White	49.6	47.7	47.7	52.9	52.9	54.9	63.8	64.0	64.0	58.9	58.7	62.6	59.9	61.1	64.9 [b]	67.2	67.1	69.2	59.6	59.9	62.4 [b]
Medicaid Eligible																					
Yes	108.1 [a]	105.9 [a]	108.5 [a]	127.7 [a]	125.7 [a]	132.0 [a]	142.9 [a]	143.4 [a]	143.6 [a]	133.0 [a]	134.6 [a]	141.9 [a]	140.9 [a]	142.1 [a]	151.7 [ab]	142.5 [a]	144.1 [a]	146.2 [a]	138.1 [a]	139.7 [a]	141.3 [ab]
No	40.5	39.4	39.0	48.4	48.5	48.1	58.2	58.1	58.4	53.7	53.4	56.8	53.9	55.1	57.1	58.9	58.1	58.1	53.2	53.3	55.2 [b]
Disabled																					
Yes	95.7 [a]	96.9 [a]	94.5 [a]	105.3 [a]	104.0 [a]	108.3 [a]	117.1 [a]	116.4 [a]	116.0 [a]	108.3 [a]	109.9 [a]	113.6 [ab]	111.0 [a]	115.2 [a]	120.9 [ab]	120.2 [a]	120.7 [a]	125.0 [ab]	110.7 [a]	112.9 [a]	115.5 [ab]
No	45.2	43.9	43.9	48.8	49.1	51.2	59.6	59.9	60.9	55.2	54.8	58.9	55.7	58.7	59.5 [b]	61.3	61.0	63.2	55.6	55.7	58.3 [b]
Age																					
65+ Years	112.9 [a]	118.1 [a]	112.5 [a]	120.9 [a]	119.6 [a]	123.1 [a]	144.6 [a]	140.9 [a]	142.0 [a]	126.2 [a]	132.4 [a]	133.1 [ab]	123.5 [a]	124.9 [a]	124.3 [a]	142.3 [a]	139.6 [a]	148.0 [ab]	130.3 [a]	131.9 [a]	132.6 [ab]
Less than 65	47.7	46.0	45.7	52.9	52.7	54.7	63.5	63.6	64.2	58.5	58.3	62.1	59.6	61.1	64.1 [b]	66.5	66.4	66.5	59.5	59.6	62.0 [b]
Area of Residence																					
Rural	47.4	49.3	51.1 [ab]	52.4	53.5	53.2 [a]	74.3 [a]	71.8 [a]	75.5 [a]	66.6 [a]	66.5 [a]	70.0 [a]	64.7 [a]	65.9 [a]	69.3 [ab]	74.3 [a]	74.4 [a]	77.1 [a]	66.0 [a]	66.5 [a]	71.1 [ab]
Urban	49.5	47.9	47.7	54.9	54.5	57.2	64.0	64.6	64.9	58.5	58.1	62.6	58.6	60.2	63.1 [b]	64.2	63.5	65.9	58.6	59.0	61.5 [b]
ALL BENEFICIARIES	49.4	48.0	47.6	54.3	54.4	56.7	65.7	66.1	66.7	60.3	60.4	64.4	61.5	63.0	66.0 [b]	66.4	66.3	70.8	61.4	61.6	64.2 [b]

[a] Significantly different from the comparison group at the 0.05 level

[b] Significantly different from 1991 to 1993 at the 0.05 level

SOURCE: CHER analysis of Medicare Part A claims and denominator file for a sample of beneficiaries

TABLE VII-2

OUTPATIENT VISITS BY MFS PAYMENT CHANGE AREAS AND VULNERABLE POPULATION GROUPS, 1991-1992 (age - sex adjusted visits per beneficiary)

Vulnerable Population	MFS PAYMENT CHANGE AREAS													
	Reduction 1		2		3		4		5		Increase 6		ALL AREAS	
	1991	1992	1991	1992	1991	1992	1991	1992	1991	1992	1991	1992	1991	1992
Shortage Areas														
All Shortage Combined	6.07 [a]	5.98 [ab]	4.61 [a]	4.62 [a]	4.62 [a]	4.56 [a]	4.85 [a]	4.98 [ab]	4.52 [a]	4.63 [ab]	4.56 [a]	4.85 [ab]	4.72 [a]	4.78 [ab]
Urban	6.11 [a]	6.00 [ab]	4.72 [a]	4.71 [a]	4.61 [a]	4.59 [a]	5.16 [a]	5.31 [b]	4.92 [a]	4.98	4.29 [a]	4.34 [ab]	4.91 [a]	4.98 [ab]
Rural	2.94 [a]	3.15 [a]	5.06 [a]	5.13 [ab]	4.64 [a]	4.42 [ab]	4.33 [a]	4.36 [a]	4.33 [a]	4.48 [ab]	4.71 [a]	4.83 [b]	4.43 [a]	4.49 [ab]
Non-Shortage	6.76	6.69 [b]	5.42	5.51 [b]	5.15	5.17	5.04	5.21 [b]	4.84	5.01 [b]	4.77	4.84 [b]	5.12	5.23 [b]
Poor Areas														
All Poor Combined	6.23 [a]	7.82 [ab]	4.71 [a]	4.75 [a]	4.79 [a]	4.80 [a]	5.16 [a]	5.28 [b]	4.94 [a]	5.04 [b]	4.94 [a]	4.92 [a]	5.07 [a]	5.11 [ab]
Urban	6.32 [a]	7.92 [ab]	4.66 [a]	4.70 [a]	4.77 [a]	4.81 [a]	5.29 [a]	5.40 [a]	4.89 [a]	4.98 [b]	4.42 [a]	4.42 [a]	5.12	5.17 [ab]
Rural	2.74 [a]	2.78 [a]	5.03 [a]	5.31 [ab]	4.66 [a]	4.66 [ab]	4.54 [a]	4.59 [a]	5.02 [a]	5.16 [ab]	5.12 [a]	5.09 [a]	4.89 [a]	4.89 [a]
Non Poor	6.67	6.61	5.43	5.52 [b]	5.16	5.16	5.01	5.18 [b]	4.81	4.99 [b]	4.75	4.82 [b]	5.10	5.21 [b]
Races														
Black	5.61 [a]	5.37 [ab]	4.42 [a]	4.50 [ab]	4.58 [a]	4.59 [a]	4.66 [a]	4.67 [ab]	4.89	4.98 [ab]	4.62 [a]	4.59 [a]	4.67 [a]	4.75 [ab]
White	6.67	6.78 [b]	5.55	5.63	5.26	5.25	5.13	5.28 [b]	4.90	5.05 [b]	4.86	4.91	5.21	5.30 [b]
Medicaid Eligible														
Yes	6.18 [a]	6.01 [ab]	5.98 [a]	5.92 [a]	5.98 [a]	5.79 [ab]	5.29 [a]	5.36 [a]	5.17 [a]	5.20 [a]	5.63 [a]	5.59 [a]	5.71 [a]	5.67 [a]
No	6.55	6.47 [b]	5.33	5.44 [b]	5.02	5.06	5.00	5.16 [b]	4.78	4.97 [b]	4.63	4.71 [b]	5.03	5.15 [b]
Disabled														
Yes	7.56 [a]	7.46 [ab]	5.86 [a]	5.92 [a]	5.44 [a]	5.46 [a]	5.31 [a]	5.45 [ab]	5.21 [a]	5.36 [ab]	5.12 [a]	5.19 [ab]	5.43 [a]	5.52 [ab]
No	6.69	6.60 [b]	5.35	5.44 [b]	5.09	5.10	4.99	5.16 [b]	4.77	4.98 [b]	4.72	4.78 [b]	5.06	5.17 [b]
Age														
65+ Years	6.43 [a]	6.31 [ab]	4.71 [a]	4.78 [ab]	4.16 [a]	4.17 [a]	4.19 [a]	4.37 [ab]	3.93 [a]	4.06 [ab]	3.97 [a]	4.04 [ab]	4.26 [a]	4.36 [ab]
Less than 65	6.77	6.68 [b]	5.41	5.50 [b]	5.15	5.17	5.05	5.22 [b]	4.84	5.02 [b]	4.79	4.85 [b]	5.12	5.23 [b]
Area of Residence														
Rural	4.98 [a]	4.91 [ab]	5.35	5.49 [b]	4.80 [a]	4.70 [ab]	4.61 [a]	4.73 [ab]	4.82 [a]	4.79 [ab]	4.79 [a]	4.85 [ab]	4.72 [a]	4.81 [ab]
Urban	6.82	6.73 [b]	5.40	5.48	5.19	5.23	5.14	5.32 [b]	4.99	5.17 [b]	4.72	4.78 [b]	5.25	5.36 [b]
ALL BENEFICIARIES	6.76	6.67 [b]	5.39	5.46 [b]	5.12	5.14	5.03	5.19 [b]	4.82	4.99 [b]	4.77	4.83 [b]	5.10	5.20 [b]

[a] Significantly different from the comparison group at the 0.05 level

[b] Significantly different from 1991 to 1992 at the 0.05 level

SOURCE: CHER analysis of Medicare Part B claims and denominator file for a sample of beneficiaries

TABLE VII-3

EMERGENCY ROOM VISITS BY MFS PAYMENT CHANGE AREAS AND VULNERABLE POPULATION GROUPS, 1991-1992 (age - sex adjusted visits per beneficiary)

Vulnerable Population	MFS PAYMENT CHANGE AREAS												ALL AREAS	
	Reduction 1		2		3		4		5		Increase 6			
	1991	1992	1991	1992	1991	1992	1991	1992	1991	1992	1991	1992	1991	1992
Shortage Areas														
All Shortage Combined	0.31 [a]	0.31 [a]	0.38 [a]	0.40 [ab]	0.40 [a]	0.35 [ab]	0.39 [a]	0.35 [ab]	0.36 [a]	0.31 [b]	0.37 [a]	0.35 [ab]	0.38 [a]	0.34 [ab]
Urban	0.31 [a]	0.32 [a]	0.40 [a]	0.42 [ab]	0.42 [a]	0.37 [ab]	0.44 [a]	0.38 [ab]	0.39 [a]	0.39 [a]	0.35 [a]	0.38 [ab]	0.42 [a]	0.38 [ab]
Rural	0.14 [a]	0.14 [a]	0.33 [a]	0.38 [ab]	0.24 [a]	0.23 [ab]	0.30	0.29	0.35 [a]	0.27 [ab]	0.38 [a]	0.34 [ab]	0.32 [a]	0.28 [ab]
Non-Shortage	0.26	0.25 [b]	0.29	0.29	0.32	0.30 [b]	0.31	0.29	0.33	0.32 [b]	0.33	0.33	0.31	0.30 [b]
Poor Areas														
All Poor Combined	0.37 [a]	0.35 [ab]	0.39 [a]	0.40 [ab]	0.44 [a]	0.38 [ab]	0.39 [a]	0.34 [ab]	0.43 [a]	0.43 [a]	0.37 [a]	0.38 [a]	0.41 [a]	0.37 [ab]
Urban	0.38 [a]	0.38 [ab]	0.40 [a]	0.41 [a]	0.45 [a]	0.39 [ab]	0.38 [a]	0.34 [ab]	0.47 [a]	0.48 [a]	0.37 [a]	0.38 [a]	0.42 [a]	0.37 [ab]
Rural	0.26 [a]	0.19 [ab]	0.31 [a]	0.34 [ab]	0.34 [a]	0.32 [ab]	0.40 [a]	0.36 [ab]	0.37 [a]	0.37 [a]	0.37 [a]	0.38 [a]	0.37 [a]	0.36 [ab]
Non Poor	0.25	0.24 [b]	0.29	0.29	0.32	0.30 [b]	0.31	0.29	0.33	0.31 [b]	0.33	0.32	0.31	0.30 [b]
Races														
Black	0.44 [a]	0.42 [ab]	0.44 [a]	0.48 [ab]	0.48 [a]	0.45 [ab]	0.48 [a]	0.44 [ab]	0.48 [a]	0.48 [a]	0.45 [a]	0.48 [ab]	0.47 [a]	0.45 [ab]
White	0.26	0.25 [b]	0.28	0.28	0.32	0.30 [b]	0.31	0.29	0.33	0.31 [b]	0.32	0.32	0.31	0.29 [b]
Medicaid Eligible														
Yes	0.55 [a]	0.53 [ab]	0.71 [a]	0.73 [ab]	0.69 [a]	0.66 [ab]	0.70 [a]	0.67 [ab]	0.72 [a]	0.71 [a]	0.70 [a]	0.71 [a]	0.69 [a]	0.66 [ab]
No	0.22	0.21 [b]	0.25	0.25	0.28	0.26 [b]	0.28	0.28 [b]	0.30	0.28 [b]	0.27	0.27	0.28	0.28 [b]
Disabled														
Yes	0.49 [a]	0.48 [a]	0.55 [a]	0.56 [a]	0.58 [a]	0.55 [ab]	0.56 [a]	0.54 [ab]	0.59 [a]	0.57 [ab]	0.57 [a]	0.59 [ab]	0.57 [a]	0.56 [ab]
No	0.24	0.23 [b]	0.27	0.27	0.30	0.28 [b]	0.29	0.27	0.30	0.29 [b]	0.30	0.29	0.29	0.28 [b]
Age														
65+ Years	0.49 [a]	0.49 [a]	0.54 [a]	0.55 [ab]	0.56 [a]	0.53 [ab]	0.50 [a]	0.51 [ab]	0.53 [a]	0.52 [a]	0.55 [a]	0.56 [ab]	0.53 [a]	0.53 [a]
Less than 65	0.25	0.24 [b]	0.29	0.29	0.32	0.30 [b]	0.31	0.29 [b]	0.33	0.31 [b]	0.33	0.32	0.31	0.30 [b]
Area of Residence														
Rural	0.24 [a]	0.24	0.30 [a]	0.31 [a]	0.31 [a]	0.30 [b]	0.30	0.29	0.34	0.31 [ab]	0.34 [a]	0.34 [a]	0.32	0.31 [ab]
Urban	0.26	0.25 [b]	0.29	0.29	0.33	0.31 [b]	0.32	0.30	0.33	0.33	0.31	0.30 [b]	0.32	0.30 [b]
ALL BENEFICIARIES	0.26	0.25 [b]	0.29	0.29	0.33	0.31 [b]	0.31	0.30 [b]	0.33	0.32 [b]	0.33	0.33	0.32	0.30 [b]

[a] Significantly different from the comparison group at the 0.05 level

[b] Significantly different from 1991 to 1992 at the 0.05 level

SOURCE: CHER analysis of Medicare Part B claims and denominator file for a sample of beneficiaries

TABLE VIII-4 (continued)

UTILIZATION, ACCESS, AND SATISFACTION INDICATORS, BY EXPECTED LEVEL OF 1996 MEDICARE PAYMENT CHANGE: 1991-1993

Type of Regular Source	2.01 TO 6 PERCENT REDUCTION 1991	1992	1993	PLUS OR MINUS 2 PERCENT CHANGE 1991	1992	1993
Physician's office	69.4% *	71.8% *	71.8% *	58.4%	62.4%	59.1%
Other place with regular physician	18.7% *	15.8%	18.3% *	29.2%	24.9%	28.1%
Other place with no regular physician	3.3%	3.3%	3.1%	5.6%	3.9%	3.3%
None	8.7%	9.3%	8.8%	6.8%	8.6%	9.5%
Physician Use						
Percent with:						
Physician visit (any setting)	85.5%	89.8% (b)	91.7% (a)	87.3%	90.8%	91.5% (a)
Physician visit in non-hospital setting	83.0%	86.3%	89.2% (a)	85.5%	89.2%	89.8% (a)
Outpatient department visit	23.1%	34.0% (b)	33.1% (a)	27.2%	33.0% (b)	35.3% (a)
Emergency room visit	19.4%	22.7%	22.4%	18.3%	21.2%	19.8%
Average Number of Visits per User:						
Total	6.0	6.4	6.4	5.9	8.2	8.3
To primary care physician	4.2	4.5	4.5	4.3	4.5	4.4
To medical specialist	3.2	3.0	3.1	2.6	2.6	2.7
To other specialist	3.2	3.2	3.0	3.3	3.2	3.5
To non-physician	1.4	2.0	1.5	2.0	2.0	1.7
Hospital Use						
Percent with hospitalization	16.6%	12.1% (b) *	16.8% (c)	14.4%	16.0%	13.1%
Percent with ACS condition	2.6%	2.6%	8.2% (c) (a)	2.7%	4.1%	3.9%
Preventive Use						
Percent with flu shot in previous winter	43.2%	46.7% (b)	53.0% (a)	43.7%	53.0% (b)	54.6% (a)
Percent of women with mammogram in previous year	34.0% *	29.8% *	30.0%	44.0%	37.3%	33.9% (a)
Percent of women with Pap smear in previous year	46.2%	30.8% (b)	29.9% (a)	51.9%	33.3% (b)	32.0% (a)
Barriers to Care						
Percent reporting a health problem and not receiving care	8.8%	6.8%	7.5%	8.9%	7.4%	6.7%
Of those, percent reporting a financial barrier	37.2%	41.8%	29.3%	51.1%	60.1%	40.7%
Satisfaction with Care						
Percent satisfied with:						
Quality of medical care	94.7%	96.2%	97.1% (a)	95.9%	97.4%	96.6%
Availability of medical care	89.7%	93.1%	94.8% (a)	89.9%	94.4% (b)	92.9%
Ease of getting to doctor	93.2%	95.2%	95.2%	95.1%	94.8%	95.1%
Costs of medical care	70.8% *	80.1% (b)	82.4% (a)	76.2%	81.8% (b)	86.0% (c) (a)

TABLE VIII-4 (continued)

UTILIZATION, ACCESS, AND SATISFACTION INDICATORS, BY EXPECTED LEVEL OF 1996 MEDICARE PAYMENT CHANGE: 1991-1993

	2.01 TO 5 PERCENT INCREASE			5.01 TO 10 PERCENT INCREASE		
Type of Regular Source	1991	1992	1993	1991	1992	1993
Physician's office	74.2%	79.1% (b)	78.6% (a)	59.2%	57.4%	70.1% (c) (a)
Other place with regular physician	14.9%	8.7%	9.7%	26.0%	27.5%	19.1%
Other place with no regular physician	3.7%	3.5%	3.7%	4.2%	3.3%	2.5%
None	7.3%	6.7%	7.6%	10.7%	11.6%	8.3%
Physician Use						
Percent with:						
Physician visit (any setting)	85.5%	91.6% (b)	91.8% (a)	84.0%	86.6% (b)	89.6% (a)
Physician visit in non-hospital setting	82.1%	89.0% (b)	89.5% (a)	80.9%	84.1%	87.2% (a)
Outpatient department visit	29.2%	40.6% (b)	40.1% (a)	27.6%	36.0% (b)	37.6% (a)
Emergency room visit	17.1%	21.3% (b)	23.4% (a)	15.9%	22.1% (b)	25.4% (a)
Average Number of Visits per User:						
Total	6.1	6.5	6.5	5.5	6.1	6.1
To primary care physician	4.9	5.0	4.7	4.1	4.3	4.3
To medical specialist	2.5	2.7	3.4 (c) (a)	3.0	2.8	3.3
To other specialist	2.9	3.1	3.0	2.9	2.9	3.2
To non-physician	1.6	1.4	2.5	1.8	2.7	1.6
Hospital Use						
Percent with hospitalization	13.4%	14.8%	16.5%	12.6%	13.0%	17.1% (c) (a)
Percent with ACS condition	3.0%	4.5%	5.4% (a)	1.5%	2.3%	6.7% (c) (a)
Preventive Use						
Percent with flu shot in previous winter	39.5%	45.5% (b)	49.1% (a)	43.6%	51.9% (b)	55.9% (a)
Percent of women with mammogram in previous year	41.9%	31.7% (b)	33.0% (a)	37.2%	30.9%	36.7%
Percent of women with Pap smear in previous year	51.5%	36.8% (b)	34.4% (a)	46.7%	28.4% (b)	31.0% (a)
Barriers to Care						
Percent reporting a health problem and not receiving care	10.9%	8.2% (b)	7.2% (a)	10.9%	11.0%	6.6% (c) (a)
Of those, percent reporting a financial barrier	53.3%	47.0%	54.4%	59.5%	85.9%	48.4% (c)
Satisfaction with Care						
Percent satisfied with:						
Quality of medical care	95.3%	98.3%	95.9%	94.5%	95.9%	96.9% (a)
Availability of medical care	89.6%	91.6%	93.3% (a)	89.3%	91.7%	95.5% (c) (a)
Ease of getting to doctor	92.6%	93.2%	94.5%	93.2%	93.6%	94.7%
Costs of medical care	70.2%	78.8% (b)	81.6% (a)	89.9%	73.6%	83.2% (c) (a)

TABLE VII-4

CONSULTATIONS BY MFS PAYMENT CHANGE AREAS AND VULNERABLE POPULATION GROUPS, 1991-1992 (age - sex adjusted consults per beneficiary)

Vulnerable Population	MFS PAYMENT CHANGE AREAS												ALL AREAS	
	Reduction 1		2		3		4		5		Increase 6			
	1991	1992	1991	1992	1991	1992	1991	1992	1991	1992	1991	1992	1991	1992
Shortage Areas														
All Shortage Combined	0.51 [a]	0.72 [b]	0.37 [a]	0.50 [ab]	0.52 [a]	0.66 [ab]	0.39 [a]	0.58 [b]	0.35	0.48 [b]	0.32 [a]	0.47 [ab]	0.41 [a]	0.56 [b]
Urban	0.51	0.72 [b]	0.38 [a]	0.51 [ab]	0.58 [a]	0.74 [ab]	0.47 [a]	0.67 [ab]	0.46 [a]	0.60 [ab]	0.35 [a]	0.54 [ab]	0.49 [a]	0.67 [ab]
Rural	0.21 [a]	0.20 [a]	0.33 [a]	0.48 [ab]	0.24 [a]	0.35 [ab]	0.26 [a]	0.37 [ab]	0.30 [a]	0.42 [ab]	0.30	0.43 [b]	0.26 [a]	0.40 [ab]
Non-Shortage	0.52	0.71 [b]	0.40	0.57 [b]	0.44	0.60 [b]	0.42	0.58 [b]	0.35	0.49 [b]	0.30	0.42 [b]	0.40	0.56 [b]
Poor Areas														
All Poor Combined	0.77 [a]	0.99 [ab]	0.39	0.59 [ab]	0.55 [a]	0.72 [ab]	0.49 [a]	0.71 [ab]	0.37 [a]	0.56 [ab]	0.30	0.42 [b]	0.48 [a]	0.67 [ab]
Urban	0.78 [a]	1.01 [ab]	0.40	0.60 [ab]	0.60 [a]	0.77 [ab]	0.53 [a]	0.77 [ab]	0.44 [a]	0.64 [ab]	0.31 [a]	0.47 [ab]	0.54 [a]	0.74 [ab]
Rural	0.23 [a]	0.28 [a]	0.28 [a]	0.54 [b]	0.26 [a]	0.40 [ab]	0.25 [a]	0.35 [ab]	0.26 [a]	0.43 [ab]	0.29 [a]	0.41 [ab]	0.27 [a]	0.40 [ab]
Non Poor	0.50	0.69 [b]	0.40	0.57 [b]	0.43	0.59 [b]	0.41	0.57 [b]	0.35	0.49 [b]	0.30	0.42 [b]	0.40	0.55 [b]
Races														
Black	0.54	0.79 [ab]	0.38 [a]	0.60 [ab]	0.54 [a]	0.71 [ab]	0.48 [a]	0.67 [ab]	0.42 [a]	0.58 [ab]	0.29 [a]	0.41 [ab]	0.45 [a]	0.63 [ab]
White	0.54	0.74 [b]	0.40	0.57 [b]	0.44	0.60 [b]	0.42	0.58 [b]	0.36	0.49 [b]	0.31	0.43 [b]	0.41	0.56 [b]
Medicaid Eligible														
Yes	0.79 [a]	1.07 [ab]	0.57 [a]	0.85 [ab]	0.69 [a]	0.93 [ab]	0.59 [a]	0.82 [ab]	0.50 [a]	0.69 [ab]	0.44 [a]	0.59 [ab]	0.59 [a]	0.82 [ab]
No	0.48	0.66 [b]	0.38	0.54 [b]	0.41	0.58 [b]	0.40	0.56 [b]	0.34	0.47 [b]	0.28	0.40 [b]	0.38	0.53 [b]
Disabled														
Yes	0.71 [a]	1.02 [ab]	0.55 [a]	0.81 [ab]	0.63 [a]	0.86 [ab]	0.57 [a]	0.82 [ab]	0.51 [a]	0.70 [ab]	0.42 [a]	0.58 [ab]	0.56 [a]	0.79 [ab]
No	0.50	0.68 [b]	0.38	0.54 [b]	0.42	0.57 [b]	0.40	0.56 [b]	0.34	0.47 [b]	0.28	0.40 [b]	0.39	0.54 [b]
Age														
85+ Years	0.66 [a]	1.00 [ab]	0.49 [a]	0.73 [ab]	0.57 [a]	0.77 [ab]	0.56 [a]	0.80 [ab]	0.40 [a]	0.56 [ab]	0.34 [a]	0.47 [ab]	0.51 [a]	0.72 [ab]
Less than 85	0.51	0.70 [b]	0.39	0.56 [b]	0.44	0.60 [b]	0.41	0.58 [b]	0.35	0.49 [b]	0.30	0.42 [b]	0.40	0.56 [b]
Area of Residence														
Rural	0.23 [a]	0.31 [ab]	0.33 [a]	0.50 [ab]	0.27 [a]	0.39 [ab]	0.28 [a]	0.39 [ab]	0.31 [a]	0.43 [ab]	0.29 [a]	0.41 [ab]	0.29 [a]	0.41 [ab]
Urban	0.53	0.72 [b]	0.40	0.56 [b]	0.46	0.65 [b]	0.46	0.64 [b]	0.40	0.54 [b]	0.33	0.45 [b]	0.45	0.62 [b]
ALL BENEFICIARIES	0.52	0.71 [b]	0.40	0.57 [b]	0.44	0.60 [b]	0.42	0.58 [b]	0.35	0.49 [b]	0.30	0.42 [b]	0.40	0.56 [b]

[a] Significantly different from the comparison group at the 0.05 level

[b] Significantly different from 1991 to 1992 at the 0.05 level

SOURCE: CHER analysis of Medicare Part B claims and denominator file for a sample of beneficiaries

TABLE VII-5

MAMMOGRAPHIES BY MFS PAYMENT CHANGE AREAS AND VULNERABLE POPULATION GROUPS, 1991-1992 (age - adjusted tests per 1,000 female beneficiaries)

Vulnerable Population	MFS PAYMENT CHANGE AREAS													
	Reduction 1		2		3		4		5		Increase 6		ALL AREAS	
	1991	1992	1991	1992	1991	1992	1991	1992	1991	1992	1991	1992	1991	1992
Shortage Areas														
All Shortage Combined	267.0 [a]	244.8 [a,b]	217.3 [a]	230.5 [a,b]	207.6 [a]	210.0 [a]	253.6 [a]	260.4 [a]	259.0 [a]	265.2 [a,b]	232.9 [a]	239.1 [a,b]	240.1 [a]	245.5 [a,b]
Urban	267.6 [a]	245.3 [a,b]	193.5 [a]	210.5 [a,b]	206.0 [a]	207.9 [a]	252.8 [a]	257.7 [a]	252.1 [a]	258.3 [a]	234.1 [a]	242.2 [a,b]	231.2 [a]	235.7 [a]
Rural	226.7 [a]	211.2 [a]	298.3 [a]	296.7 [a]	218.9 [a]	223.3 [a]	255.8 [a]	265.3 [a,b]	262.3 [a]	268.4 [a]	232.2 [a]	237.4 [a,b]	254.9 [a]	261.7 [a,b]
Non-Shortage	367.1	338.5 [b]	318.9	321.3	286.8	270.5	275.6	263.9	262.4	266.2	244.7	247.1	281.3	284.9
Poor Areas														
All Poor Combined	242.2 [a]	215.7 [a,b]	186.6 [a]	198.3 [a,b]	208.9 [a]	218.5 [a,b]	225.9 [a]	231.2 [a]	233.3 [a]	242.0 [a,b]	183.3 [a]	195.4 [a,b]	215.3 [a]	222.2 [a,b]
Urban	243.1 [a]	216.1 [a,b]	163.0 [a]	190.8 [a,b]	217.6 [a]	226.8 [a,b]	228.8 [a]	232.2 [a]	253.4 [a]	253.6 [a]	181.1 [a]	198.2 [a,b]	221.4 [a]	226.7 [a,b]
Rural	176.0 [a]	165.8 [a]	234.2 [a]	208.0 [a,b]	152.8 [a]	165.8 [a,b]	0.0	0.0	201.1 [a]	223.8 [a,b]	184.1 [a]	197.9 [a,b]	191.8 [a]	205.2 [a,b]
Non Poor	372.3	343.4 [b]	322.2	324.4	272.0	272.7	279.0	267.1	263.0	266.7	249.2	250.9	284.3	287.8
Races														
Black	210.4 [a]	191.4 [a,b]	178.3 [a]	192.6 [a,b]	185.9 [a]	193.1 [a]	217.8 [a]	222.3 [a]	205.2 [a]	217.9 [a,b]	142.4 [a]	152.5 [a,b]	195.0 [a]	203.0 [a,b]
White	381.3	353.2 [b]	333.1	332.7	279.8	279.3	286.1	291.7	293.4	296.7	261.4	261.1	293.0	294.3
Medicaid Eligible														
Yes	198.6 [a]	172.3 [a,b]	165.6 [a]	174.6 [a,b]	148.3 [a]	157.9 [a,b]	171.6 [a]	172.9 [a]	149.6 [a]	164.4 [a,b]	120.3 [a]	133.1 [a,b]	156.8 [a]	163.0 [a,b]
No	393.6	364.2 [b]	334.3	338.4	282.4	283.3	285.6	294.5	295.6	300.9	267.6	266.7	294.9	298.4
Disabled														
Yes	298.0 [a]	266.5 [a,b]	251.3 [a]	257.0 [a]	212.6 [a]	217.7 [a]	229.2 [a]	239.2 [a,b]	225.0 [a]	238.6 [a,b]	192.4 [a]	194.1 [a]	225.4 [a]	232.8 [a,b]
No	368.9	339.2 [b]	319.7	322.1	269.4	270.6	277.9	265.7	265.2	269.5	246.8	251.3	283.1	286.5
Age														
65+ Years	91.9 [a]	93.9 [a,b]	89.7 [a]	82.4 [a]	60.9 [a]	62.2 [a]	61.3 [a]	64.4 [a]	59.6 [a]	66.0 [a,b]	50.8 [a]	55.2 [a,b]	64.1 [a]	66.4 [a]
Less than 65	374.7	345.5 [b]	323.2	326.7	273.2	275.4	282.7	291.3	289.3	295.5	251.4	254.2	287.2	291.3
Area of Residence														
Rural	275.6 [a]	260.2 [a,b]	341.9 [a]	341.7 [a]	203.7 [a]	214.7 [a,b]	267.7	273.8 [a]	261.5 [a]	269.9 [a]	226.2 [a]	230.7 [a]	252.0 [a]	257.9 [a,b]
Urban	367.2	336.5 [b]	311.8	314.7	277.4	277.4	276.4	284.9	297.9	302.3	263.2	265.8	289.3	292.2
ALL BENEFICIARIES	364.7	336.3 [b]	315.3	318.1	265.4	267.2	274.5	282.5	280.8	286.7	244.4	246.9	279.1	282.8

[a] Significantly different from the comparison group at the 0.05 level

[b] Significantly different from 1991 to 1992 at the 0.05 level

SOURCE: CHER analysis of Medicare Part B claims and denominator file for a sample of beneficiaries

TABLE VII-6

CATARACT SURGERIES BY MFS PAYMENT CHANGE AREAS AND VULNERABLE POPULATION GROUPS, 1991-1992 (age - sex adjusted procedures per 1,000 beneficiaries)

Vulnerable Population	MFS PAYMENT CHANGE AREAS												ALL AREAS	
	Reduction 1		2		3		4		5		Increase 6			
	1991	1992	1991	1992	1991	1992	1991	1992	1991	1992	1991	1992	1991	1992
Shortage Areas														
All Shortage Combined	49.9	45.5 [a]	43.5 [a]	66.8 [b]	40.8	51.8 [b]	39.1	47.2 [b]	37.4 [a]	50.4 [b]	35.8 [a]	46.7 [a]	39.4 [a]	50.8 [b]
Urban	50.3	45.9 [a]	44.4 [a]	72.9 [b]	40.2	44.4 [a]	38.0	44.9	40.8	51.2 [b]	31.2 [a]	44.1 [a]	39.8 [a]	46.1 [a]
Rural	20.9 [a]	21.0 [a]	40.9 [a]	46.8 [a]	43.0	98.7 [a]	41.1	51.0 [b]	38.0 [a]	50.1 [b]	37.9 [a]	51.1 [a]	38.6 [a]	54.8 [b]
Non-Shortage	50.7	50.1	51.0	64.4 [b]	41.5	61.6 [b]	38.7	45.5 [b]	40.9	51.9 [b]	41.9	64.5 [b]	41.9	54.4 [b]
Poor Areas														
All Poor Combined	54.9 [a]	54.7 [a]	47.3 [a]	66.8 [b]	38.8	54.8 [b]	35.4 [a]	40.8 [b]	44.8 [a]	65.1 [a]	41.5	76.9 [a]	39.5 [a]	53.4 [b]
Urban	55.0 [a]	54.8 [a]	43.8 [a]	66.1 [b]	38.1 [a]	41.5 [a]	34.1 [a]	39.2 [a]	39.9	69.5 [a]	40.2	122.5 [a]	37.8 [a]	47.4 [a]
Rural	49.5	50.5	91.0 [a]	78.0 [a]	42.9	134.1 [a]	0.0	0.0	51.8 [a]	58.8 [a]	42.0	81.9 [b]	45.7 [a]	76.0 [a]
Non Poor	50.5	49.7	50.9	64.2 [b]	41.7	61.9 [b]	39.0	46.0 [b]	40.5	51.2 [b]	41.7	62.9 [b]	42.0	54.3 [b]
Races														
Black	42.1 [a]	40.1 [a]	40.0 [a]	58.3 [b]	38.1 [a]	45.1 [a]	31.6 [a]	33.4 [a]	38.0 [a]	39.2 [a]	29.1 [a]	41.1 [a]	34.2 [a]	40.6 [a]
White	52.4	51.9	52.3	65.8 [b]	42.7	64.3 [b]	40.1	47.6 [b]	42.1	53.6 [b]	43.7	66.1 [b]	43.3	56.3 [b]
Medicaid Eligible														
Yes	38.1 [a]	53.8 [a]	52.5	66.5 [b]	45.4 [a]	78.3 [b]	41.4	44.7	44.8 [a]	63.4 [a]	44.7 [a]	81.2 [a]	45.4 [a]	63.4 [a]
No	49.9	49.4	50.8	64.0 [b]	40.9	59.3 [b]	38.5	45.7 [b]	40.2	50.8 [b]	41.2	61.2 [b]	41.4	53.2 [b]
Disabled														
Yes	38.6 [a]	40.3 [a]	38.1 [a]	49.1 [a]	31.1 [a]	60.2 [b]	29.0 [a]	35.8 [a]	30.8 [a]	42.5 [a]	29.9 [a]	42.7 [a]	31.1 [a]	44.9 [a]
No	51.8	50.8	52.1	66.0 [b]	42.8	61.3 [b]	39.8	46.7 [b]	41.8	52.8 [b]	43.3	66.8 [b]	43.0	55.2 [b]
Age														
65+ Years	60.2 [a]	57.5 [a]	61.1 [a]	71.5 [b]	51.4 [a]	76.3 [b]	48.8 [a]	55.7 [a]	52.2 [a]	58.0 [b]	50.0 [a]	87.1 [a]	51.9 [a]	65.3 [a]
Less than 65	50.5	49.8	50.5	64.3 [b]	41.1	60.7 [b]	38.4	45.3 [b]	40.3	51.8 [b]	41.4	63.3 [b]	41.5	53.9 [b]
Area of Residence														
Rural	32.9 [a]	38.3 [a]	52.4	58.2 [b]	43.3	126.9 [a]	42.3 [a]	49.7 [b]	40.7	49.8 [b]	42.1	63.2 [b]	42.4	63.9 [a]
Urban	51.3	50.4	50.5	65.4 [b]	41.0	47.8 [b]	37.7	44.4	40.6	53.7 [b]	40.5	65.7 [b]	41.5	50.5 [b]
ALL BENEFICIARIES	50.7	50.0	50.7	64.5 [b]	41.4	61.2 [b]	38.7	45.6 [b]	40.6	51.8 [b]	41.7	63.9 [b]	41.8	54.2 [b]

[a] Significantly different from the comparison group at the 0.05 level

[b] Significantly different from 1991 to 1992 at the 0.05 level

SOURCE: CHER analysis of Medicare Part B claims and denominator file for a sample of beneficiaries

Technical Notes

VULNERABLE POPULATION SUBGROUP

Nine groups of potentially vulnerable beneficiaries were identified.

- Those residing in a rural Health Professional Shortage Area (HPSA).
- Those residing in an urban HPSA.
- Those residing in a rural poverty area.
- Those residing in an urban poverty area.
- Those jointly eligible for Medicaid.
- Those who were black.
- Those who were originally entitled to Medicare because of disability or because of end stage renal disease.
- Those who were very old (85 years of age or over).
- Those residing in any rural area.

All Medicare beneficiaries not meeting any of these criteria constituted a tenth group.

All of the variables needed to identify these vulnerable population subgroups were available from the denominator file itself except residence in a HPSA or in a poverty area. Considerable effort was required to construct these measures, that is:

HPSAs: A complete list of HPSAs was published in the September 1991 *Federal Register*. A small number of HPSAs encompass entire counties, but the majority are defined as much smaller geographic units: census tracts, census county subdivisions, enumeration districts, and the like The smallest geographic unit on the denominator file is the zip code. Crosswalks were purchased linking census tracts to zip codes and census county subdivisions (CCD) to zip codes from two private vendors. These crosswalks included data on the percent of a zip code's population included in a given CCD or census tract. These crosswalks, combined with detailed zip code maps, helped identify all but a few of the HPSAs in the *Federal Register*. A Medicare beneficiary was defined as living in a shortage area if 50 percent or more of the zip code's population had been identified as residing in an HPSA.

Poverty Areas: Medicare beneficiaries were was defined as living in a poverty area if they resided in a zip code in which 30 percent or more elderly households were below the 1991 poverty threshold for a retired couple. Information on the 1991 income distribution of elderly households by zip code was obtained from a commercial vendor of census data. Because the Federal poverty threshold is expressed in nominal dollars without any adjustment for geographic cost-of-living differences, a methodology for making this adjustment was developed and applied. A paper describing this methodology is available from the authors.

Sample Selection

Once the HPSA and poverty area designation had been determined, all beneficiaries on the denominator file were assigned to 1 of 60 strata (6 payment change categories times 10 population groups). Sampling algorithms developed by Dr. Martin Frankel were used to select cases within each stratum. Sampling weights were calculated as the inverse of the probability of selection. A total of 2,754,770 Medicare beneficiaries were selected in 1991.

Individuals who became Medicare-eligible for the first time in 1992 were assigned to 1 of the 60 strata. These eligibles were sampled using the same sampling probabilities that were applied to individuals in those strata in 1991. These beneficiaries then were included in the 1992 analysis (along with surviving beneficiaries from the 1991 sample). This same process was repeated with those becoming eligible in 1993.

Technical Note B

TABLE VII-B-1

NURSING HOME VISITS BY MFS PAYMENT CHANGE AREAS AND VULNERABLE POPULATION GROUPS, 1991-1992 (age - sex adjusted visits per beneficiary)

Vulnerable Population	MFS PAYMENT CHANGE AREAS: Reduction 1		2		3		4		5		Increase 6		ALL AREAS	
	1991	1992	1991	1992	1991	1992	1991	1992	1991	1992	1991	1992	1991	1992
Shortage Areas														
All Shortage Combined	0.31 [a]	0.27 [b]	0.30 [a]	0.31 [a]	0.37 [a]	0.39 [a]	0.29 [a]	0.33 [ab]	0.27 [a]	0.28 [a]	0.25 [a]	0.28 [b]	0.30	0.33 [b]
Urban	0.32 [a]	0.27 [b]	0.33 [a]	0.34 [a]	0.39 [a]	0.42 [a]	0.32	0.36 [b]	0.27 [a]	0.30 [ab]	0.19 [a]	0.24 [ab]	0.34 [a]	0.37 [ab]
Rural	0.26	0.30	0.21 [a]	0.20 [a]	0.23 [a]	0.22 [a]	0.24 [a]	0.24 [a]	0.26 [a]	0.27 [a]	0.29 [a]	0.31 [ab]	0.25 [a]	0.25 [a]
Non-Shortage	0.25	0.26	0.26	0.26	0.33	0.35	0.34	0.37	0.31	0.34 [b]	0.27	0.28 [b]	0.31	0.34 [b]
Poor Areas														
All Poor Combined	0.36 [a]	0.35 [a]	0.42 [a]	0.45 [ab]	0.40 [a]	0.44 [ab]	0.40 [a]	0.46 [ab]	0.33 [a]	0.36 [ab]	0.23 [a]	0.24 [a]	0.38 [a]	0.42 [ab]
Urban	0.37 [a]	0.36 [a]	0.43 [a]	0.45 [ab]	0.43 [a]	0.47 [ab]	0.42 [a]	0.49 [ab]	0.36 [a]	0.40 [ab]	0.15 [a]	0.18 [ab]	0.41 [a]	0.46 [ab]
Rural	0.05 [a]	0.14 [a]	0.35 [a]	0.37 [ab]	0.24 [a]	0.27 [ab]	0.27 [a]	0.31 [ab]	0.28 [a]	0.30 [a]	0.26 [a]	0.26 [a]	0.26 [a]	0.29 [ab]
Non Poor	0.24	0.26	0.26	0.27	0.32	0.34	0.33	0.36	0.31	0.33 [b]	0.27	0.29 [b]	0.31	0.33 [b]
Races														
Black	0.47 [a]	0.49 [a]	0.39 [a]	0.43 [ab]	0.36 [a]	0.43 [ab]	0.40 [a]	0.47 [ab]	0.33	0.36 [ab]	0.27	0.29 [b]	0.37 [a]	0.42 [ab]
White	0.26	0.26	0.26	0.26	0.34	0.36	0.34	0.37	0.32	0.34	0.26	0.29	0.32	0.34 [b]
Medicaid Eligible														
Yes	1.27 [a]	1.28 [a]	1.64 [a]	1.66 [a]	1.59 [a]	1.66 [ab]	1.48 [a]	1.60 [ab]	1.61 [a]	1.71 [ab]	1.21 [a]	1.23 [a]	1.51 [a]	1.58 [ab]
No	0.10	0.11 [b]	0.12	0.13 [b]	0.16	0.19	0.23	0.26	0.19	0.20	0.12	0.13	0.16	0.20 [b]
Disabled														
Yes	0.45 [a]	0.52 [ab]	0.48 [a]	0.52 [ab]	0.63 [a]	0.69 [ab]	0.58 [a]	0.66 [ab]	0.52 [a]	0.59 [ab]	0.39 [a]	0.43 [ab]	0.55 [a]	0.62 [ab]
No	0.23	0.24	0.24	0.26	0.30	0.32	0.31	0.34	0.29	0.30	0.25	0.26	0.29	0.31 [b]
Age														
65+ Years	2.05 [a]	2.04 [a]	2.13 [a]	2.19 [ab]	2.28 [a]	2.42 [ab]	2.43 [a]	2.69 [ab]	2.22 [a]	2.39 [ab]	1.89 [a]	1.96 [ab]	2.26 [a]	2.43 [ab]
Less than 65	0.20	0.21	0.22	0.23	0.28	0.29	0.26	0.30	0.26	0.27	0.22	0.24	0.26	0.28 [b]
Area of Residence														
Rural	0.10 [a]	0.14 [ab]	0.21 [a]	0.22 [a]	0.27 [a]	0.29 [ab]	0.27 [a]	0.30 [a]	0.31	0.34	0.28 [a]	0.30 [a]	0.28 [a]	0.30 [ab]
Urban	0.25	0.26	0.27	0.29	0.34	0.37	0.35	0.39	0.31	0.33	0.23	0.25 [b]	0.32	0.35 [b]
ALL BENEFICIARIES	0.25	0.26	0.26	0.28	0.33	0.35	0.33	0.37 [b]	0.31	0.33 [b]	0.27	0.28 [b]	0.31	0.34 [b]

[a] Significantly different from the comparison group at the 0.05 level

[b] Significantly different from 1991 to 1992 at the 0.05 level

SOURCE: CHER analysis of Medicare Part B claims and denominator file for a sample of beneficiaries

TABLE VII-B-3

PNEUMOCOCCAL PNEUMONIA VACCINATIONS BY MFS PAYMENT CHANGE AREAS AND VULNERABLE POPULATION GROUPS, 1991-1992 (age - sex adjusted services per 1,000 beneficiaries)

Vulnerable Population	MFS PAYMENT CHANGE AREAS												ALL AREAS	
	Reduction 1		2		3		4		5		Increase 6			
	1991	1992	1991	1992	1991	1992	1991	1992	1991	1992	1991	1992	1991	1992
Shortage Areas														
All Shortage Combined	19.9 [a]	18.9 [ab]	14.2 [a]	13.2 [ab]	13.8 [a]	11.4 [ab]	36.8	34.0	143.9 [a]	104.9 [a]	23.7 [a]	18.3 [ab]	54.3 [a]	42.4 [b]
Urban	20.1 [a]	17.2 [a]	14.9 [a]	14.0 [a]	12.5 [a]	10.6 [ab]	16.2 [a]	18.0	398.6 [a]	260.0 [ab]	19.5 [a]	16.6 [a]	81.1 [a]	46.6
Rural	4.8 [a]	0.2 [ab]	12.2 [a]	10.8 [ab]	22.0	16.2 [ab]	77.6 [a]	61.1	25.8 [a]	25.2 [a]	28.0 [a]	18.2 [ab]	43.3	35.9
Non-Shortage	21.9	22.9	24.1	22.8	23.3	20.2 [b]	36.9	41.6	78.2	85.4	24.7	21.5 [b]	38.1	36.3
Poor Areas														
All Poor Combined	9.8 [a]	5.6 [ab]	14.0 [a]	13.2 [a]	13.7 [a]	10.8 [ab]	14.5 [a]	12.9 [a]	62.8	38.1 [ab]	18.8 [a]	15.8 [ab]	19.6 [a]	14.7 [ab]
Urban	9.7 [a]	5.6 [ab]	13.9 [a]	12.9 [ab]	12.1 [a]	10.1 [ab]	13.0 [a]	12.3 [a]	91.6	49.4 [b]	12.1 [a]	12.1 [a]	19.0 [a]	14.2 [a]
Rural	17.0 [a]	8.3 [ab]	14.8 [a]	16.4 [ab]	23.9	13.4 [ab]	0.0	0.0	16.6 [a]	17.9 [a]	21.1 [a]	17.0 [ab]	21.6 [a]	16.2 [ab]
Non Poor	22.6	23.6	24.2	22.9	23.6	20.7 [b]	39.0	43.6	83.7	89.5	25.1	21.8 [b]	40.5	39.4
Races														
Black	9.9 [a]	11.9 [a]	11.0 [a]	10.9 [a]	11.8 [a]	9.8 [ab]	14.4 [a]	14.9	101.6	68.3 [b]	13.0 [a]	10.2 [ab]	27.5 [a]	21.3 [ab]
White	22.2	24.1	25.2	23.5	24.4	21.2 [b]	40.1	45.3	82.1	70.4	26.3	22.7 [b]	40.7	39.2
Medicaid Eligible														
Yes	11.6 [a]	14.0 [a]	14.0 [a]	12.1 [ab]	15.2 [a]	10.7 [ab]	24.4	25.3	33.7 [a]	22.3 [a]	17.7 [a]	15.2 [ab]	20.9 [a]	17.8 [a]
No	23.4	24.1	24.8	23.6	23.7	20.8 [b]	38.1	42.6	87.4	72.6	25.8	22.3 [b]	40.9	38.7
Disabled														
Yes	15.9 [a]	15.1 [a]	18.0 [a]	16.9 [a]	17.7 [a]	13.4 [ab]	30.1	31.2	58.0	38.7 [a]	19.1 [a]	18.1 [ab]	29.6 [a]	24.9 [a]
No	22.4	23.4	24.3	23.0	23.4	20.4 [b]	37.7	42.4	85.7	71.5	25.4	22.1 [b]	40.0	37.9
Age														
65+ Years	18.1 [a]	20.4 [b]	16.5 [a]	17.9 [ab]	15.0 [a]	14.0 [a]	22.3 [a]	26.1	46.6 [a]	43.0 [a]	15.2 [a]	14.7 [a]	23.7 [a]	24.4 [a]
Less than 65	22.0	22.9	23.9	22.6	23.0	19.9 [b]	37.4	41.6	83.6	68.9	24.9	21.5 [b]	39.3	37.0
Area of Residence														
Rural	23.6 [a]	18.7 [ab]	24.5	21.2 [b]	27.1 [a]	19.2 [b]	59.1 [a]	55.3	25.5 [a]	24.0 [a]	24.6	20.5 [ab]	34.7	30.9
Urban	21.6	23.0	23.6	22.7	21.9	19.6	30.7	37.4	134.5	107.6	24.5	23.3	40.6	38.9
ALL BENEFICIARIES	21.9	22.6	23.7	22.5	22.6	19.7 [b]	37.0	41.3	82.8	68.1	24.7	21.4 [b]	38.9	36.7

[a] Significantly different from the comparison group at the 0.05 level

[b] Significantly different from 1991 to 1992 at the 0.05 level

SOURCE: CHER analysis of Medicare Part B claims and denominator file for a sample of beneficiaries

TABLE VII-B-4

ECHOCARDIOGRAMS BY MFS PAYMENT CHANGE AREAS AND VULNERABLE POPULATION GROUPS, 1991-1992 (age - sex adjusted leats per 1,000 beneficiaries)

Vulnerable Population	MFS PAYMENT CHANGE AREAS													
	Reduction 1		2		3		4		5		Increase 6		ALL AREAS	
	1991	1992	1991	1992	1991	1992	1991	1992	1991	1992	1991	1992	1991	1992
Shortage Areas														
All Shortage Combined	226.3	252.7 [a]	143.7 [a]	156.9 [a]	172.8 [a]	198.1 [a]	167.9	192.0 [a]	156.4 [a]	175.4 [b]	139.8 [a]	162.7 [a]	164.2 [a]	186.0 [a]
Urban	228.7	254.2 [b]	156.5	169.2 [a]	185.8 [a]	210.5 [a]	166.5 [a]	215.9 [a]	215.2 [a]	240.9 [a]	154.8 [a]	194.4 [a]	186.1 [a]	213.3 [a]
Rural	59.0 [a]	156.1 [a]	104.3 [a]	120.4 [a]	93.8 [a]	109.4 [a]	132.4 [a]	151.4 [a]	129.2 [a]	145.5 [a]	131.4 [a]	145.8 [a]	126.1 [a]	143.2 [a]
Non-Shortage	226.5	264.6 [b]	160.1	166.5 [b]	155.0	174.4 [b]	159.5	180.3 [b]	146.7	166.1 [b]	120.8	138.5 [b]	155.6	176.9 [b]
Poor Areas														
All Poor Combined	466.2 [a]	603.2 [a]	169.7 [a]	181.6 [b]	182.1 [a]	208.4 [a]	195.2 [a]	222.6 [a]	172.1 [a]	192.5 [a]	142.4 [a]	168.2 [a]	191.1 [a]	218.7 [a]
Urban	493.6 [a]	612.6 [a]	172.6 [a]	184.5 [b]	190.2 [a]	219.4 [a]	207.6 [a]	233.6 [a]	192.0 [a]	210.0 [a]	140.7 [a]	160.2 [a]	208.4 [a]	235.4 [a]
Rural	54.4 [a]	80.9 [a]	133.6 [a]	150.8 [a]	132.6 [a]	143.5 [a]	0.0	0.0	141.6	166.7 [b]	142.9 [a]	164.3 [a]	134.6 [a]	156.4 [a]
Non Poor	211.1	245.0 [b]	159.0	165.7 [b]	153.0	171.9 [b]	158.6	177.3 [b]	146.3	165.6 [b]	119.6	137.0 [b]	153.2	174.2 [b]
Races														
Black	264.5 [a]	298.6 [a]	178.4 [a]	199.6 [a]	190.1 [a]	217.5 [a]	194.4 [a]	223.7 [a]	193.4 [a]	211.6 [a]	136.5 [a]	164.3 [a]	188.4 [a]	212.6 [a]
White	229.9	272.0 [b]	160.4	167.2 [b]	155.1	173.9 [b]	159.8	180.0 [b]	145.9	165.0 [b]	121.5	138.4 [b]	155.8	176.8 [b]
Medicaid Eligible														
Yes	388.7 [a]	458.2 [a]	214.0 [a]	239.9 [a]	210.6 [a]	236.1 [a]	207.7 [a]	238.2 [a]	186.4 [a]	210.6 [a]	170.2 [a]	192.1 [a]	210.9 [a]	239.4 [a]
No	202.5	235.8 [b]	153.7	179.6 [b]	149.2	166.0 [b]	155.6	175.7 [b]	143.7	162.5 [b]	113.7	130.9 [b]	150.1	170.6 [b]
Disabled														
Yes	298.0 [a]	342.4 [a]	208.9 [a]	235.3 [a]	201.6 [a]	228.5 [a]	207.2 [a]	238.3 [a]	197.1 [a]	222.5 [a]	157.9 [a]	179.7 [a]	202.0 [a]	230.1 [a]
No	220.2	257.5 [b]	154.4	160.4 [b]	150.7	169.7 [b]	154.7	174.6 [b]	141.5	160.4 [b]	118.2	133.9 [b]	150.8	171.8 [b]
Age														
85+ Years	288.9 [a]	355.1 [a]	185.9 [a]	211.2 [a]	171.8 [a]	199.0 [a]	182.1 [a]	209.0 [a]	150.7	178.1 [a]	132.7 [a]	153.3 [a]	174.4 [a]	202.3 [a]
Less than 85	224.8	261.7 [b]	158.9	164.8 [b]	155.5	174.9 [b]	159.4	180.1 [b]	147.3	166.4 [b]	121.0	138.9 [b]	155.5	176.7 [b]
Area of Residence														
Rural	110.3 [a]	113.0 [a]	155.4	191.9 [b]	119.4 [a]	135.7 [a]	135.1 [a]	156.1 [a]	129.8 [a]	144.3 [a]	124.1 [a]	142.1 [a]	129.8 [a]	148.2 [a]
Urban	230.3	269.3 [b]	160.2	164.5 [b]	163.3	183.6 [b]	167.0	186.0 [b]	163.2	167.0 [b]	114.4	132.7 [b]	166.2	186.7 [b]
ALL BENEFICIARIES	226.5	264.3 [b]	159.6	165.5 [b]	156.0	175.6 [b]	160.0	181.0 [b]	147.4	166.7 [b]	121.3	139.3 [b]	156.0	177.4 [b]

[a] Significantly different from the comparison group at the 0.05 level

[b] Significantly different from 1991 to 1992 at the 0.05 level

SOURCE: CHER analysis of Medicare Part B claims and denominator file for a sample of beneficiaries

TABLE VII-B-5

CARDIAC CATHETERIZATIONS BY MFS PAYMENT CHANGE AREAS AND VULNERABLE POPULATION GROUPS, 1991-1992 (age - sex adjusted procedures per 1,000 beneficiaries)

Vulnerable Population	MFS PAYMENT CHANGE AREAS													
	Reduction 1		2		3		4		5		Increase 6		ALL AREAS	
	1991	1992	1991	1992	1991	1992	1991	1992	1991	1992	1991	1992	1991	1992
Shortage Areas														
All Shortage Combined	22.5	21.2 [a]	20.9 [a]	22.3 [ab]	19.1 [a]	20.2 [a]	19.4	22.9 [b]	18.8 [a]	20.0 [a]	18.9 [a]	21.0 [ab]	19.3 [a]	21.4 [ab]
Urban	22.7	21.2 [a]	21.4 [a]	21.7 [a]	18.8 [a]	20.1 [a]	18.5 [a]	21.4 [b]	19.1	20.2 [a]	17.0 [a]	20.3 [ab]	19.0 [a]	20.6 [ab]
Rural	9.8 [a]	21.3 [b]	19.5 [a]	24.0 [ab]	20.9 [a]	20.9 [a]	21.1	25.4 [b]	18.3 [a]	19.9 [a]	20.0 [a]	21.3 [ab]	19.7 [a]	22.3 [ab]
Non-Shortage	23.8	23.4	24.3	29.0 [b]	23.8	25.1	21.2	23.8	21.2	23.4 [b]	21.3	22.9 [b]	22.2	24.5 [b]
Poor Areas														
All Poor Combined	17.8 [a]	19.4 [ab]	19.4 [a]	19.8 [a]	18.8 [a]	20.9 [ab]	15.2 [a]	17.3 [ab]	18.8 [a]	20.9 [ab]	17.8 [a]	19.7 [ab]	17.3 [a]	19.3 [ab]
Urban	18.0 [a]	19.5 [ab]	19.2 [a]	19.5 [a]	18.1 [a]	20.8 [ab]	14.3 [a]	16.3 [a]	15.2 [a]	17.5 [ab]	14.8 [a]	18.0 [ab]	16.3 [a]	18.3 [ab]
Rural	9.3 [a]	11.9 [a]	22.2 [a]	23.0 [a]	22.8	22.9 [a]	0.0	0.0	23.6 [a]	25.8 [ab]	18.8 [a]	20.9 [ab]	21.0 [a]	23.0 [ab]
Non Poor	23.9	23.5	24.4	29.2 [b]	23.9	25.3	21.8	24.3	21.1	23.3 [b]	21.5	23.1 [b]	22.4	24.8 [b]
Races														
Black	18.7 [a]	18.8 [a]	18.1 [a]	17.7 [ab]	17.5 [a]	19.2 [ab]	15.3 [a]	18.8 [a]	15.3 [a]	17.1 [ab]	10.2 [a]	13.0 [ab]	16.4 [a]	17.1 [ab]
White	24.9	24.5	25.0	30.2 [b]	24.5	25.7	21.9	24.7	21.8	23.8	22.9	24.2	23.0	25.3 [b]
Medicaid Eligible														
Yes	22.0 [a]	20.8 [ab]	24.8	26.5 [a]	22.4	23.8	17.5 [a]	21.0 [b]	19.0 [a]	19.3 [a]	17.9 [a]	21.2 [ab]	20.1 [a]	22.1 [ab]
No	23.8	23.7	24.1	29.0 [b]	23.5	25.0	21.4	24.0	21.2	23.5 [b]	21.7	23.1 [b]	22.3	24.8 [b]
Disabled														
Yes	36.8 [a]	37.7 [a]	37.7 [a]	41.3 [ab]	33.4 [a]	36.2 [ab]	26.9 [a]	33.4 [ab]	31.2 [a]	34.1 [ab]	29.1 [a]	33.2 [ab]	31.0 [a]	35.1 [ab]
No	22.2	22.1	22.7	27.5 [b]	22.2	23.6	20.4	22.6	19.8	21.9 [b]	20.1	21.5	21.0	23.2 [b]
Age														
65+ Years	5.0 [a]	5.0 [a]	3.7 [a]	4.6 [ab]	3.6 [a]	4.6 [ab]	2.6 [a]	3.7 [ab]	2.3 [a]	3.0 [ab]	2.3 [a]	2.6 [ab]	3.0 [a]	3.9 [ab]
Less than 65	24.1	23.6	24.7	29.4 [b]	23.9	25.4	21.8	24.4	21.5	23.8 [b]	21.7	23.4 [b]	22.8	25.0 [b]
Area of Residence														
Rural	14.8 [a]	13.9 [a]	26.3 [a]	30.4 [b]	24.1	26.8 [b]	20.8	24.2 [b]	19.4 [a]	22.5 [b]	21.8	23.2 [b]	21.3	24.1 [b]
Urban	23.9	23.6	23.8	26.5 [b]	23.2	24.4	21.1	23.7	22.4	23.8	20.3	22.0 [b]	22.3	24.5 [b]
ALL BENEFICIARIES	23.6	23.3	24.1	28.7 [b]	23.3	24.8	21.1	23.8 [b]	21.0	23.2 [b]	21.2	22.9 [b]	22.0	24.4 [b]

[a] Significantly different from the comparison group at the 0.05 level

[b] Significantly different from 1991 to 1992 at the 0.05 level

SOURCE: CHER analysis of Medicare Part B claims and denominator file for a sample of beneficiaries

TABLE VII-8-6

HEAD CT SCANS BY MFS PAYMENT CHANGE AREAS AND VULNERABLE POPULATION GROUPS, 1991-1992 (age - sex adjusted scans per 1,000 beneficiaries)

Vulnerable Population	MFS PAYMENT CHANGE AREAS: Reduction 1		2		3		4		5		Increase 6		ALL AREAS	
	1991	1992	1991	1992	1991	1992	1991	1992	1991	1992	1991	1992	1991	1992
Shortage Areas														
All Shortage Combined	72.2 [a]	64.8 [b]	70.8 [a]	68.5 [ab]	78.3 [a]	79.9 [a]	66.7	72.1	66.3	66.8	67.2	71.1 [ab]	70.6 [a]	72.3 [ab]
Urban	73.1 [a]	65.4 [ab]	76.8 [a]	75.4 [a]	80.6 [a]	84.8 [a]	76.0 [a]	81.4 [a]	91.8 [a]	90.4 [a]	66.9	74.1 [ab]	79.4 [a]	82.3 [ab]
Rural	11.2 [a]	17.9 [a]	47.0 [a]	46.0 [a]	46.9 [a]	51.2 [ab]	56.2 [a]	56.4 [a]	57.5 [a]	56.1 [a]	67.3	69.5 [a]	56.6 [a]	58.5 [a]
Non-Shortage	65.0	61.7 [b]	63.8	64.8	69.5	68.5	67.3	67.5	66.8	66.3	65.2	64.4	67.0	67.2
Poor Areas														
All Poor Combined	97.6 [a]	90.2 [ab]	77.8 [a]	81.8 [ab]	79.3 [a]	79.9 [a]	75.1 [a]	76.5 [a]	83.7 [a]	85.9 [a]	66.2 [a]	71.9 [ab]	77.8 [a]	79.0 [a]
Urban	98.9 [a]	91.2 [ab]	78.7 [a]	81.5 [a]	81.9 [a]	82.8 [a]	77.1 [a]	78.7 [a]	89.1 [a]	89.7 [a]	67.6 [a]	69.4 [a]	80.5 [a]	81.5 [a]
Rural	37.6 [a]	31.0 [a]	67.8 [a]	63.1 [ab]	63.5 [a]	62.7 [a]	0.0	0.0	75.6 [a]	80.4 [ab]	66.3 [a]	72.7 [ab]	67.2	69.9 [ab]
Non Poor	63.2	60.1	63.4	64.1	68.8	68.0	68.7	67.0	66.2	66.4	65.0	64.1	66.4	66.6
Races														
Black	97.0 [a]	89.3 [ab]	68.4 [a]	69.6 [ab]	92.1 [a]	91.8 [a]	66.0 [a]	66.4 [a]	97.6 [a]	97.7 [a]	74.7 [a]	78.5 [a]	88.5 [a]	89.7 [a]
White	65.3	62.4	63.7	63.5	69.3	68.3	67.2	68.9	66.1	67.8	65.5	64.0	66.9	66.6
Medicaid Eligible														
Yes	114.5 [a]	108.6 [ab]	113.0 [a]	116.2 [ab]	113.7 [a]	113.0 [a]	112.4 [a]	111.0 [a]	116.5 [a]	117.5 [a]	109.4 [a]	108.5 [a]	113.2 [a]	112.9 [a]
No	57.8	54.9	58.8	59.1	64.4	63.7	63.3	63.6	62.2	64.5	56.4	57.6	62.2	62.5
Disabled														
Yes	86.5 [a]	86.6 [ab]	65.5 [a]	68.0 [a]	94.1 [a]	91.2 [a]	69.2 [a]	90.2 [a]	90.5 [a]	92.9 [a]	80.4 [a]	82.2 [a]	89.2 [a]	89.6 [a]
No	63.2	59.4 [b]	61.9	62.8	67.1	66.7	64.9	65.3	64.2	66.4	63.2	62.3	64.7	65.1
Age														
65+ Years	123.5 [a]	124.6 [a]	112.4 [a]	112.5 [a]	112.2 [a]	115.2 [a]	108.1 [a]	112.6 [ab]	102.1 [a]	110.0 [ab]	101.0 [a]	101.2 [a]	108.4 [a]	112.3 [ab]
Less than 65	63.8	59.9 [b]	62.9	63.7	68.7	67.6	66.2	66.4	66.0	67.9	64.3	63.6	66.1	66.2
Area of Residence														
Rural	46.5 [a]	46.8 [a]	56.7 [a]	58.9 [a]	62.1 [a]	61.3 [a]	56.6 [a]	56.9 [a]	61.8 [a]	61.8 [a]	67.6 [a]	67.0 [a]	61.9 [a]	61.8 [a]
Urban	65.8	62.2 [b]	65.2	65.8	71.4	70.8	69.8	70.3	71.6	75.9	59.6	58.9	69.3	69.7
ALL BENEFICIARIES	65.2	61.7 [b]	64.1	64.9	69.8	69.2	67.4	67.7	66.9	69.1	65.3	64.6	67.2	67.5

[a] Significantly different from the comparison group at the 0.05 level

[b] Significantly different from 1991 to 1992 at the 0.05 level

SOURCE: CHER analysis of Medicare Part B claims and denominator file for a sample of beneficiaries

TABLE VII-B-7

BRAIN MRI SCANS BY MFS PAYMENT CHANGE AREAS AND VULNERABLE POPULATION GROUPS, 1991-1992 (age - sex adjusted scans per 1,000 beneficiaries)

Vulnerable Population	MFS PAYMENT CHANGE AREAS: Reduction 1		2		3		4		5		Increase 6		ALL AREAS	
	1991	1992	1991	1992	1991	1992	1991	1992	1991	1992	1991	1992	1991	1992
Shortage Areas														
All Shortage Combined	18.6 [a]	20.7 [ab]	14.4 [a]	19.2 [ab]	14.9 [a]	19.2 [ab]	12.7 [a]	16.2 [b]	11.1 [a]	14.1 [ab]	13.6	18.6 [ab]	13.2 [a]	18.9 [ab]
Urban	19.8 [a]	20.6 [ab]	14.2 [a]	18.5 [ab]	15.5 [a]	19.9 [b]	13.1	17.1 [b]	12.0 [a]	15.4 [b]	17.5 [a]	24.5 [ab]	14.2 [a]	18.3 [ab]
Rural	7.0 [a]	13.0 [a]	15.1 [a]	21.4 [b]	11.1 [a]	15.5 [ab]	12.1 [a]	14.8 [b]	10.7 [a]	13.5 [ab]	11.8 [a]	15.4 [b]	11.5 [a]	14.7 [ab]
Non-Shortage	21.7	26.0 [b]	19.4	23.3 [b]	16.0	22.6 [b]	14.6	18.6	13.5	18.6 [b]	13.4	16.5 [b]	16.0	19.8 [b]
Poor Areas														
All Poor Combined	19.4 [a]	18.7 [a]	15.0 [a]	19.8 [ab]	15.6 [a]	19.4 [ab]	12.6	16.7 [b]	12.0 [a]	15.1 [b]	11.6 [a]	14.5 [ab]	13.9 [a]	17.5 [ab]
Urban	19.5 [a]	18.9 [a]	15.2 [a]	20.0 [ab]	16.2	19.8 [ab]	13.0	18.6 [b]	13.2	14.6 [ab]	17.6 [a]	21.0 [ab]	14.7 [a]	18.2 [ab]
Rural	12.9 [a]	5.6 [ab]	13.5 [a]	14.8 [a]	12.0 [a]	17.0 [ab]	0.0	0.0	10.3 [a]	15.7 [b]	9.9 [a]	12.4 [ab]	11.0 [a]	15.0 [ab]
Non Poor	21.7	26.2 [b]	19.4	23.3 [b]	16.1	22.8 [b]	14.8	18.6	13.4	16.5 [b]	13.6	16.7 [b]	16.0	19.8 [b]
Races														
Black	17.1 [a]	18.7 [ab]	13.7 [a]	18.2 [ab]	14.6 [a]	18.1 [ab]	12.0 [a]	17.4 [b]	12.4	15.8 [b]	10.0 [a]	12.2 [ab]	12.6 [a]	18.8 [ab]
White	23.1	27.8 [b]	19.9	23.7 [b]	18.8	23.3 [b]	15.0	18.7	13.5	18.6 [b]	14.1	17.2 [b]	16.4	20.1 [b]
Medicaid Eligible														
Yes	20.1 [a]	21.2 [a]	20.2	24.1 [b]	19.5	23.2 [b]	15.1	18.6	14.1	16.6 [ab]	14.7 [a]	18.9 [b]	16.8 [a]	19.8 [b]
No	21.6	26.5 [b]	19.1	23.0 [b]	17.7	22.3 [b]	14.6	18.6	13.3	18.2 [b]	13.3	16.5 [b]	15.7	19.8 [b]
Disabled														
Yes	26.6 [a]	26.4 [ab]	21.7 [a]	24.9 [b]	20.9 [a]	26.4 [ab]	17.9 [a]	21.2 [b]	18.7 [a]	19.5 [ab]	15.7 [a]	17.7 [ab]	18.6 [a]	22.4 [ab]
No	21.1	25.6 [b]	18.9	22.9 [b]	17.5	22.0 [b]	14.3	18.2	12.9	16.1 [b]	13.2	16.4 [b]	15.5	19.4 [b]
Age														
65+ Years	16.9 [a]	17.4 [a]	11.8 [a]	18.6 [ab]	10.4 [a]	13.1 [ab]	6.0 [a]	11.0 [ab]	6.4 [a]	8.7 [ab]	7.7 [a]	6.9 [ab]	9.0 [a]	11.7 [ab]
Less than 65	21.7	26.1 [b]	19.4	23.3 [b]	18.1	22.7 [b]	14.6	18.7	13.5	18.7 [b]	13.6	18.7 [b]	16.0	19.9 [b]
Area of Residence														
Rural	7.6 [a]	10.0 [ab]	17.1 [a]	20.8 [ab]	13.6 [a]	18.4 [ab]	12.8	14.1 [a]	11.9 [a]	14.3 [ab]	11.8 [a]	14.2 [ab]	12.8 [a]	15.1 [ab]
Urban	22.0	28.4 [b]	19.5	23.5 [b]	18.7	23.3 [b]	15.2	19.7	14.7	18.4 [b]	18.0	22.0 [b]	17.1	21.4 [b]
ALL BENEFICIARIES	21.6	25.8 [b]	19.2	23.1 [b]	17.9	22.4 [b]	14.6	18.5 [b]	13.3	16.4 [b]	13.5	16.5 [b]	15.8	19.7 [b]

[a] Significantly different from the comparison group at the 0.05 level

[b] Significantly different from 1991 to 1992 at the 0.05 level

SOURCE: CHER analysis of Medicare Part B claims and denominator file for a sample of beneficiaries

TABLE VII-B-8

ARTHROSCOPIES BY MFS PAYMENT CHANGE AREAS AND VULNERABLE POPULATION GROUPS, 1991-1992 (age - sex adjusted procedures per 1,000 beneficiaries)

Vulnerable Population	MFS PAYMENT CHANGE AREAS: Reduction 1		2		3		4		5		Increase 6		ALL AREAS	
	1991	1992	1991	1992	1991	1992	1991	1992	1991	1992	1991	1992	1991	1992
Shortage Areas														
All Shortage Combined	5.4 [a]	8.4 [b]	4.3	5.3 [ab]	2.9	3.5	2.6	3.3	2.5	3.6 [b]	2.6 [a]	3.6 [b]	2.8 [a]	3.7 [ab]
Urban	5.5 [a]	8.3 [b]	3.5 [a]	4.9 [ab]	2.6 [a]	3.3	2.5	2.8	1.5 [a]	2.6 [ab]	3.3	4.6 [ab]	2.6 [a]	3.4 [ab]
Rural	0.0 [a]	14.8 [b]	6.7 [a]	6.6	4.5	5.0	2.8	4.1 [b]	3.0	4.1 [b]	2.2 [a]	3.0 [b]	3.2 [a]	4.2 [b]
Non-Shortage	7.6	8.2	4.8	6.7 [b]	3.9	4.4	3.2	4.0	2.8	4.0 [b]	3.3	3.6	3.7	4.5 [b]
Poor Areas														
All Poor Combined	4.4 [a]	3.9 [a]	2.3 [a]	3.1 [ab]	2.2 [a]	2.3 [a]	2.1 [a]	2.2 [a]	1.9 [a]	2.7 [ab]	2.1 [a]	2.8 [ab]	2.2 [a]	2.4 [ab]
Urban	4.5 [a]	3.9 [a]	2.3 [a]	3.0 [ab]	2.1 [a]	2.1 [a]	2.0 [a]	2.0 [a]	1.3 [a]	2.3 [ab]	2.0 [a]	2.3 [a]	2.1 [a]	2.3 [a]
Rural	3.1 [a]	3.5 [a]	2.4 [a]	4.2 [ab]	2.9 [a]	3.0 [a]	0.0	0.0	2.8	3.1 [a]	2.1 [a]	3.0 [b]	2.6 [a]	3.1 [ab]
Non Poor	7.7	8.5	4.9	6.8 [b]	4.1	4.6	3.2	4.1	2.9	4.0 [b]	3.4	3.6	3.7	4.6 [b]
Races														
Black	2.5 [a]	3.8 [ab]	1.5 [a]	2.1 [ab]	1.5 [a]	2.2 [a]	1.8 [a]	2.5 [a]	1.2 [a]	2.0 [ab]	1.1 [a]	1.7 [ab]	1.8 [a]	2.2 [ab]
White	8.3	8.9	5.2	7.1 [b]	4.2	4.7	3.3	4.1	2.9	4.1 [b]	3.6	3.8	3.8	4.7 [b]
Medicaid Eligible														
Yes	4.8 [a]	4.7 [a]	3.8	4.3 [a]	2.5 [a]	2.8 [a]	2.1	2.8	1.9 [a]	1.8 [a]	1.9 [a]	2.1 [a]	2.5 [a]	2.6 [a]
No	8.0	8.7	4.9	6.9 [b]	4.1	4.6	3.2	4.0	2.9	4.2 [b]	3.5	3.8	3.7	4.7 [b]
Disabled														
Yes	7.2	8.0 [b]	6.0 [a]	6.6	3.9	3.8	3.9	3.8	3.0	3.5	3.4	3.5	4.0	4.1
No	7.8	8.2	4.7	6.7 [b]	3.9	4.4	3.0	3.9	2.8	4.0 [b]	3.3	3.6	3.6	4.5 [b]
Age														
85+ Years	1.3 [a]	1.9 [ab]	0.7 [a]	1.8 [ab]	0.6 [a]	1.3 [ab]	0.5 [a]	0.6 [a]	0.4 [a]	0.6 [a]	0.6 [a]	0.4 [a]	0.6 [a]	0.9 [ab]
Less than 85	7.7	8.4	4.9	6.8 [b]	4.0	4.5	3.2	4.0	2.9	4.0 [b]	3.4	3.7	3.7	4.6 [b]
Area of Residence														
Rural	2.4 [a]	2.4 [a]	5.2	6.1	3.0	3.6	3.3	4.0	3.2	3.9	2.9 [a]	3.2 [a]	3.3	3.9 [ab]
Urban	7.7	8.4	4.7	6.7 [b]	4.1	4.5	3.1	3.9	2.5	4.0 [b]	4.2	4.4	3.6	4.7 [b]
ALL BENEFICIARIES	7.5	8.2	4.8	6.7 [b]	3.9	4.4	3.1	3.9	2.8	3.9 [b]	3.3	3.6	3.6	4.5 [b]

[a] Significantly different from the comparison group at the 0.05 level

[b] Significantly different from 1991 to 1992 at the 0.05 level

SOURCE: CHER analysis of Medicare Part B claims and denominator file for a sample of beneficiaries

TABLE VII-B-9

UPPER GI ENDOSCOPIES BY MFS PAYMENT CHANGE AREAS AND VULNERABLE POPULATION GROUPS, 1991-1992 (age - sex adjusted procedures per 1,000 beneficiaries)

Vulnerable Population	MFS PAYMENT CHANGE AREAS										ALL AREAS	
	Reduction 1		2		3		4		5		Increase 6			
	1991	1992	1991	1992	1991	1992	1991	1992	1991	1992	1991	1992	1991	1992
Shortage Areas														
All Shortage Combined	41.2	39.4	39.8	41.7 [b]	40.5	39.3	35.2	35.7	31.5	34.3 [b]	37.8 [a]	39.0 [ab]	38.2	38.9
Urban	41.4	39.7	42.0 [a]	44.1 [a]	42.1 [a]	40.4	36.5	37.6	36.8 [a]	40.0 [ab]	38.8 [a]	43.1 [ab]	39.9 [a]	39.8 [a]
Rural	27.6 [a]	19.2 [a]	33.0 [a]	34.6 [a]	31.1 [a]	33.3 [ab]	29.5 [a]	32.0 [a]	29.1 [a]	31.7 [a]	37.0 [a]	36.9	30.3 [a]	32.5 [ab]
Non-Shortage	42.3	40.9	37.8	39.4	37.8	38.2	34.9	36.1	33.7	34.8	35.3	37.0	36.0	37.0
Poor Areas														
All Poor Combined	50.4 [a]	51.3 [a]	40.0 [a]	44.5 [ab]	40.6	41.6 [a]	35.3	36.6 [b]	36.4 [a]	39.2 [ab]	36.9	37.8	38.1 [a]	40.4 [ab]
Urban	50.6 [a]	51.7 [a]	40.0	44.6 [ab]	41.6 [a]	42.4 [a]	35.3	36.4	36.4 [a]	36.9	34.9	37.4 [b]	36.5 [a]	40.7 [ab]
Rural	25.7 [a]	28.4	39.5	41.1	35.1	36.0 [b]	0.0	0.0	36.5 [a]	42.5 [ab]	37.5 [a]	37.7	36.2	39.2 [ab]
Non Poor	41.8	40.2	37.6	39.2	37.7	37.9	34.9	35.8	33.4	34.6	35.3	37.1	35.9	36.7
Races														
Black	44.6	44.6 [a]	43.6 [a]	48.7 [ab]	45.2 [a]	46.7 [a]	38.1	40.5 [a]	41.0 [a]	42.7 [a]	35.4	39.3 [ab]	40.6 [a]	43.1 [ab]
White	43.4	41.9	36.0	39.3	37.9	37.6	35.4	36.2	33.5	34.4	36.1	37.1	36.3	36.9
Medicaid Eligible														
Yes	61.7 [a]	62.9 [a]	65.5 [a]	64.6 [a]	61.0 [a]	66.2 [ab]	50.4 [a]	52.4 [a]	54.0 [a]	54.4 [a]	52.0 [a]	58.3 [ab]	56.2 [a]	58.7 [ab]
No	39.4	37.8	34.7	36.7	35.1	34.7	33.5	34.5	31.8	32.9	32.8	34.0	33.6	34.8
Disabled														
Yes	58.2 [a]	58.2 [a]	54.1 [a]	56.2 [a]	52.8 [a]	55.5 [a]	46.5 [a]	46.5 [a]	45.7 [a]	51.4 [ab]	45.9 [a]	49.8 [ab]	46.9 [a]	51.3 [ab]
No	40.8	39.3	36.0	37.8	36.3	36.3	33.6	34.9	32.1	32.9	33.9	35.4	34.8	35.4
Age														
65+ Years	53.5 [a]	53.0 [a]	49.5 [a]	49.6 [a]	46.9 [a]	46.6 [a]	40.8 [a]	43.0 [a]	38.8 [a]	38.4 [a]	39.7 [a]	41.7 [ab]	42.7 [a]	44.0 [ab]
Less than 65	42.0	40.5	37.4	39.2	37.7	38.0	34.8	35.8	33.5	34.7	35.3	37.0	35.8	36.8
Area of Residence														
Rural	23.5 [a]	24.1 [a]	33.6 [a]	34.1 [a]	36.0	40.2 [b]	31.3 [a]	33.4	32.1	33.7	35.8	37.1	33.3 [a]	35.2 [ab]
Urban	42.9	41.4	38.4	40.3	38.4	37.9	35.9	36.8	34.9	35.7	34.3	37.0 [b]	37.1	37.7
ALL BENEFICIARIES	42.3	40.8	37.7	39.5	38.0	38.3	34.9	36.0	33.5	34.8	35.4	37.1 [b]	36.0	37.0

[a] Significantly different from the comparison group at the 0.05 level

[b] Significantly different from 1991 to 1992 at the 0.05 level

SOURCE: CHER analysis of Medicare Part B claims and denominator file for a sample of beneficiaries

TABLE VII-B-10

SIGMOIDOSCOPIES BY MFS PAYMENT CHANGE AREAS AND VULNERABLE POPULATION GROUPS, 1991-1992 (age - sex adjusted procedures per 1,000 beneficiaries)

Vulnerable Population	MFS PAYMENT CHANGE AREAS: Reduction 1		2		3		4		5		Increase 6		ALL AREAS	
	1991	1992	1991	1992	1991	1992	1991	1992	1991	1992	1991	1992	1991	1992
Shortage Areas														
All Shortage Combined	37.4 [a]	32.2 [ab]	35.7 [a]	30.7 [ab]	27.6 [a]	25.0 [ab]	32.2 [a]	30.3 [a]	37.6 [a]	35.6 [a]	28.3 [a]	23.9 [ab]	32.6 [a]	30.0 [ab]
Urban	37.3 [a]	31.9 [ab]	37.6 [a]	30.6 [a]	26.6 [a]	23.9 [a]	31.8 [a]	29.0 [a]	35.7 [a]	33.4 [ab]	33.7 [a]	29.7 [b]	31.3 [a]	28.4 [ab]
Rural	44.3 [a]	52.4	29.3 [a]	30.4 [a]	33.9 [a]	31.8 [ab]	33.0 [a]	30.9 [a]	36.4 [a]	36.8 [a]	25.3 [a]	20.8 [ab]	34.5 [a]	32.5 [ab]
Non-Shortage	59.1	51.8 [b]	53.9	47.7 [b]	43.2	39.9	46.3	41.2 [b]	45.2	41.5 [b]	31.0	29.9	45.4	41.2 [b]
Poor Areas														
All Poor Combined	30.1 [a]	27.0 [ab]	33.0 [a]	29.2 [ab]	27.6 [a]	24.6 [ab]	31.7 [a]	28.1 [ab]	32.2 [a]	29.6 [ab]	25.1 [a]	23.5 [ab]	29.9 [a]	26.8 [ab]
Urban	30.2 [a]	27.0 [ab]	33.2 [a]	29.3 [ab]	27.9 [a]	25.5 [a]	32.4 [a]	28.9 [ab]	33.7 [a]	31.1 [ab]	25.1 [a]	22.7 [ab]	30.7 [a]	27.7 [ab]
Rural	24.2 [a]	27.9 [a]	29.7 [a]	27.6 [a]	25.2 [a]	21.0 [ab]	0.0	0.0	29.9 [a]	27.4 [ab]	25.1 [a]	23.7 [a]	26.6 [a]	23.6 [ab]
Non Poor	60.2	52.6 [b]	54.3	46.0 [b]	44.0	40.7	46.7	41.7 [b]	45.2	41.6 [b]	31.4	30.2	45.9	41.6 [b]
Races														
Black	26.3 [a]	22.3 [ab]	30.6 [a]	28.1 [ab]	25.9 [a]	23.6 [ab]	29.6 [a]	27.1 [ab]	30.1 [a]	29.0 [a]	20.2 [a]	17.6 [ab]	27.7 [a]	25.5 [ab]
White	61.3	53.6 [b]	56.0	49.3 [b]	44.7	41.2 [b]	47.7	42.4 [b]	46.7	42.6 [b]	32.7	31.5	47.0	42.5 [b]
Medicaid Eligible														
Yes	24.3 [a]	21.6 [ab]	27.6 [a]	25.6 [a]	26.1 [a]	23.5 [a]	26.5 [a]	24.2 [a]	26.2 [a]	23.6 [ab]	23.0 [a]	20.3 [ab]	26.3 [a]	23.5 [ab]
No	63.6	55.6 [b]	56.1	49.4 [b]	44.3	41.0	47.2	42.1 [b]	46.2	42.6 [b]	32.2	31.2	46.7	42.4 [b]
Disabled														
Yes	42.1 [a]	38.4 [ab]	38.1 [a]	31.6 [ab]	29.9 [a]	27.6 [a]	33.1 [a]	29.5 [ab]	32.4 [a]	31.0 [a]	24.0 [a]	22.6 [ab]	32.1 [a]	29.1 [ab]
No	60.0	52.6 [b]	54.9	46.6 [b]	43.7	40.3	46.6	41.6 [b]	46.1	42.3 [b]	31.9	30.7	46.2	41.6 [b]
Age														
65+ Years	34.6 [a]	34.6 [a]	31.2 [a]	28.6 [ab]	25.8 [a]	22.9 [ab]	29.0 [a]	26.6 [ab]	25.9 [a]	23.4 [ab]	20.7 [a]	20.4 [a]	27.4 [a]	25.2 [ab]
Less than 65	59.2	51.7 [b]	53.6	47.6 [b]	42.6	39.6	45.9	41.0 [b]	45.2	41.6 [b]	31.2	30.0	45.2	41.0 [b]
Area of Residence														
Rural	53.4 [a]	42.6 [ab]	42.1 [a]	36.7 [ab]	31.5 [a]	28.2 [ab]	39.5 [a]	33.6 [ab]	41.4 [a]	37.6 [ab]	28.0 [a]	27.6 [a]	36.7 [a]	33.1 [ab]
Urban	58.7	51.6 [b]	55.0	46.7 [b]	44.5	41.3	47.1	42.5	47.6	44.3 [b]	36.0	34.2 [b]	47.9	43.4 [b]
ALL BENEFICIARIES	58.6	51.3 [b]	53.3	47.1 [b]	42.3	39.1 [b]	45.4	40.8 [b]	44.7	41.1 [b]	30.9	29.7	44.7	40.6 [b]

[a] Significantly different from the comparison group at the 0.05 level

[b] Significantly different from 1991 to 1992 at the 0.05 level

SOURCE: CHER analysis of Medicare Part B claims and denominator file for a sample of beneficiaries

TABLE VII-B-11

COLONOSCOPIES BY MFS PAYMENT CHANGE AREAS AND VULNERABLE POPULATION GROUPS, 1991-1992 (age - sex adjusted procedures per 1,000 beneficiaries)

Vulnerable Population	MFS PAYMENT CHANGE AREAS												ALL AREAS	
	Reduction 1		2		3		4		5		Increase 6			
	1991	1992	1991	1992	1991	1992	1991	1992	1991	1992	1991	1992	1991	1992
Shortage Areas														
All Shortage Combined	41.2 [a]	41.0 [a]	32.5 [a]	36.7 [ab]	33.4 [a]	35.1 [a]	33.9 [a]	37.4 [ab]	32.1 [a]	35.5 [ab]	34.6 [a]	36.3 [b]	33.5 [a]	36.5 [ab]
Urban	41.2 [a]	41.1 [a]	33.1 [a]	37.1 [ab]	34.1 [a]	35.9 [a]	35.7	39.3	34.4	39.3 [b]	37.5 [a]	43.6 [ab]	35.0 [a]	38.1 [ab]
Rural	40.9 [a]	34.4 [a]	30.7 [a]	35.5 [ab]	29.8 [a]	30.6 [a]	30.8 [a]	34.3 [ab]	31.1 [a]	33.8 [a]	33.4	35.4 [ab]	31.0 [a]	33.9 [ab]
Non-Shortage	51.8	54.6 [b]	43.5	47.1 [b]	40.7	42.2	38.0	42.2 [b]	38.0	38.4	33.4	37.7 [b]	39.1	42.2 [b]
Poor Areas														
All Poor Combined	44.5 [a]	42.7 [ab]	32.4 [a]	38.0 [ab]	34.5 [a]	37.4 [ab]	36.2	38.7 [a]	34.3	37.2 [b]	29.4 [a]	32.6 [ab]	34.9 [a]	37.5 [ab]
Urban	45.0 [a]	43.2 [ab]	32.2 [a]	35.9 [ab]	35.4 [a]	38.2 [a]	38.7	39.0	34.0	35.7 [b]	29.1 [a]	32.9 [ab]	35.6 [a]	38.1 [ab]
Rural	15.9 [a]	14.4 [a]	34.8 [a]	37.3 [ab]	29.3 [a]	33.0 [ab]	0.0	0.0	34.8	39.5 [b]	29.5 [a]	32.5 [ab]	31.8 [a]	35.2 [ab]
Non Poor	52.0	54.9 [b]	43.7	47.2 [b]	41.0	42.3	37.9	42.2 [b]	35.6	38.2 [b]	33.8	38.1 [b]	39.1	42.2 [b]
Races														
Black	35.6 [a]	38.6 [a]	35.2 [a]	38.9 [ab]	36.4	37.6 [a]	32.5 [a]	35.9 [ab]	32.3 [a]	37.1 [b]	27.9 [a]	32.2 [ab]	33.6 [a]	36.3 [ab]
White	54.3	57.1 [b]	44.5	47.9 [b]	41.2	42.9	38.7	43.0 [b]	38.6	38.5	34.7	38.8 [b]	39.9	42.9 [b]
Medicaid Eligible														
Yes	38.3 [a]	40.5 [ab]	38.0 [a]	39.3 [a]	38.9 [a]	38.7 [a]	32.7 [a]	38.0 [a]	30.6 [a]	33.1 [a]	30.5 [a]	34.4 [ab]	34.1 [a]	38.8 [ab]
No	53.5	56.2 [b]	43.7	47.5 [b]	40.7	42.2	38.2	42.4 [b]	38.2	38.7 [b]	33.9	38.2 [b]	39.3	42.5 [b]
Disabled														
Yes	47.4 [a]	50.8 [ab]	42.5	46.2 [b]	38.3	41.0 [b]	38.6	39.4	33.2 [a]	38.7 [b]	31.4 [a]	35.8 [ab]	38.6 [a]	40.3 [ab]
No	51.9	54.5	43.2	46.7 [b]	40.5	41.9	37.8	42.2 [b]	38.1	38.1	33.7	38.0 [b]	39.0	42.1 [b]
Age														
65+ Years	38.0 [a]	40.4 [ab]	28.6 [a]	32.9 [ab]	28.6 [a]	29.0 [ab]	26.5 [a]	26.4 [a]	22.5 [a]	23.8 [ab]	24.6 [a]	27.2 [ab]	26.3 [a]	28.5 [ab]
Less than 65	52.0	54.6 [b]	43.5	47.1 [b]	40.7	42.2	38.0	42.3 [b]	38.1	38.6 [b]	33.7	38.0 [b]	39.1	42.3 [b]
Area of Residence														
Rural	26.9 [a]	28.0 [a]	41.3	45.8 [b]	34.2 [a]	37.5 [ab]	34.4 [a]	37.9 [ab]	32.4 [a]	35.4 [ab]	32.8 [a]	36.9 [ab]	33.7 [a]	37.2 [ab]
Urban	52.4	55.1 [b]	43.4	46.8 [b]	41.5	42.7	38.7	43.0	38.8	40.7	35.6	39.5 [b]	40.7	43.7 [b]
ALL BENEFICIARIES	51.8	54.2 [b]	43.1	46.7 [b]	40.3	41.8	37.7	41.9 [b]	35.8	38.2 [b]	33.4	37.7 [b]	38.7	41.9 [b]

[a] Significantly different from the comparison group at the 0.05 level

[b] Significantly different from 1991 to 1992 at the 0.05 level

SOURCE: CHER analysis of Medicare Part B claims and denominator file for a sample of beneficiaries

TABLE VII-B-12

CORONARY ARTERY BYPASS GRAFT SURGERIES BY MFS PAYMENT CHANGE AREAS AND VULNERABLE POPULATION GROUPS, 1991-1993 (age - sex adjusted procedures per 1,000 beneficiaries)

Vulnerable Population	MFS PAYMENT CHANGE AREAS																		ALL AREAS		
	Reduction 1			2			3			4			5			Increase 6					
	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993
Shortage Areas																					
All Shortage Combine	3.9 *	3.6 *	3.3 *	3.5 *	4.1 *	4.2 [a]	4.1 *	4.1 *	3.7 *	4.3	4.5	4.1	4.6	4.7	4.6	4.2	4.7	4.6 [b]	4.3 *	4.4 *	4.2 *
Urban	4.0 *	3.5 *	3.3 *	3.4 *	3.8 *	4.0 [a]	4.0 *	3.9 *	3.5 *	4.0	4.4	3.2 *	3.9 *	4.1 *	4.1 *	3.1 *	4.0 *	3.9 [a]	3.9 *	4.1 *	3.5 *
Rural	0.0 *	8.8	2.1	3.8 *	4.5 *	5.0 [b]	4.7	5.1	4.5	4.9	4.9	5.6	4.9	5.0	4.9	4.8	5.1	5.3	4.8	4.9	5.2
Non-Shortage	4.7	4.4	4.7	5.0	5.6	5.1	5.2	5.5	5.2	4.7	5.2	5.1	4.9	5.1	5.0	4.6	4.9	5.0	4.9	5.2	5.1
Poor Areas																					
All Poor Combined	3.5 *	3.4 *	3.1 [a]	3.4 *	3.0 *	3.3 *	4.0 *	3.8 *	3.6 *	3.0 *	3.2 *	3.2 *	3.7 *	3.8 *	3.9 *	3.7 *	4.2 *	4.7 [b]	3.5 *	3.5 *	3.5 *
Urban	3.6 *	3.5 *	3.2 [a]	3.3 *	2.9 *	3.0 *	3.8 *	3.6 *	3.3 *	2.9 *	3.1 *	2.7 *	2.9 *	3.0 *	2.9 *	3.2 *	3.7 *	6.1 [a]	3.3 *	3.3 *	3.1 *
Rural	1.3 *	1.0 *	1.7 *	4.3	4.4 *	7.2 [a]	5.2	4.7	4.6	3.6 *	3.7 *	6.0 [b]	5.1	4.6	5.1	3.9 *	4.3	4.2 *	4.4 *	4.3 *	5.0 [b]
Non Poor	4.7	4.4	4.7	5.0	5.7	5.1	5.3	5.6	5.3	4.8	5.3	5.2	4.9	5.1	5.0	4.6	4.9	5.0	5.0	5.3	5.1
Races																					
Black	1.8 *	2.0 *	1.5 [a]	1.9 *	2.1 *	2.2 [a]	2.6 *	2.9 *	2.8 *	1.6 *	2.1 *	2.0 [a]	2.1 *	2.2 *	2.3 *	1.9 *	1.7 *	1.5 *	2.0 *	2.3 *	2.4 [a]
White	5.0	4.6	5.0	5.2	5.6	5.3	5.5	5.8	5.4	5.0	5.5	5.3	5.1	5.2	5.1	4.9	5.2	5.4	5.2	5.5	5.3
Medicaid Eligible																					
Yes	3.1 *	3.8 *	3.4 *	3.3 *	3.5 *	3.6 *	3.6 *	3.9 *	4.0 *	3.1 *	3.2 *	3.1 *	2.6 *	3.1 *	3.4 *	3.1 *	3.2 *	3.2 *	3.3 *	3.4 *	3.5 *
No	4.8	4.5	4.9	5.1	5.6	5.2	5.3	5.6	5.3	4.8	5.3	5.2	5.1	5.2	5.1	4.9	5.1	5.3	5.0	5.4	5.2
Disabled																					
Yes	7.9 *	8.5 *	9.8 [a]	9.3 *	7.0 *	6.7 *	8.2 *	8.0 *	5.9	6.4 *	6.4 *	5.7	6.5 *	6.2 *	6.0 *	9.2 *	6.5 *	8.1 *	6.4 *	6.5 *	8.0 [a]
No	4.4	4.2	4.5	4.8	5.4	4.9	5.0	5.3	5.0	4.5	5.0	4.8	4.7	4.9	4.9	4.3	4.8	4.8	4.7	5.0	4.9
Age																					
85+ Years	0.8 *	0.8 *	0.8 *	0.4 *	0.6 *	1.0 [a]	0.5 *	0.5 *	0.7 [a]	0.3 *	0.5 *	0.6 *	0.3 *	0.4 *	0.3 *	0.2 *	0.4 *	0.4 [a]	0.4 *	0.5 *	0.6 [a]
Less than 65	4.9	4.5	4.8	5.0	5.7	5.2	5.3	5.6	5.3	4.8	5.3	5.2	5.0	5.2	5.1	4.7	4.9	5.1	5.0	5.3	5.2
Area of Residence																					
Rural	3.2 *	3.8	3.4 *	5.2	5.3	5.7	5.4	5.8	5.1	4.8	5.1	5.4	4.8	5.0	4.8	4.8	4.8	5.1	4.8	5.1	5.1
Urban	4.7	4.4	4.7	4.9	5.6	5.0	5.1	5.4	5.1	4.7	5.2	4.9	5.0	5.1	5.0	4.4	4.6	4.7	4.9	5.2	5.0
ALL BENEFICIARIES	4.8	4.4	4.7	4.9	5.5	5.1	5.1	5.4	5.1	4.7	5.2	5.0	4.9	5.1	4.9	4.6	4.8	5.0	4.8	5.2	5.0

* Significantly different from the comparison group at the 0.05 level

[a] Significantly different from 1991 to 1993 at the 0.05 level

SOURCE: CHER analysis of Medicare Part A claims and denominator file for a sample of beneficiaries

TABLE VII-B-13

PTCAs BY MFS PAYMENT CHANGE AREAS AND VULNERABLE POPULATION GROUPS, 1991-1993 (age - sex adjusted procedures per 1,000 beneficiaries)

Vulnerable Population	MFS PAYMENT CHANGE AREAS																		ALL AREAS		
	Reduction 1			2			3			4			5			Increase 6					
	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993
Shortage Areas																					
All Shortage Combine	3.2	3.1	3.2	3.2	3.8	4.5	2.5	3.0	3.3	3.0	4.3	4.5	3.0	3.5	3.7	3.4	3.8	4.4	2.8	3.7	4.0
Urban	3.2	3.2	3.3	3.1	3.1	4.0	2.4	3.0	3.3	2.5	3.8	3.8	2.5	3.0	3.8	3.1	2.8	3.0	2.5	3.3	3.5
Rural	0.0	0.0	1.2	3.5	4.8	5.7	3.5	3.8	3.0	4.0	5.2	6.1	3.2	3.7	3.7	3.8	4.0	5.2	3.6	4.3	4.7
Non-Shortage	4.2	4.4	5.0	4.3	5.2	5.3	4.4	4.4	5.0	4.1	4.9	4.8	3.8	4.2	4.8	3.8	4.1	4.1	4.1	4.5	4.8
Poor Areas																					
All Poor Combined	2.3	2.8	3.7	3.2	3.0	3.8	2.8	3.1	3.1	2.3	3.2	3.3	2.9	4.0	3.9	2.7	3.1	3.8	2.8	3.2	3.4
Urban	2.3	2.8	3.7	3.2	3.1	3.8	2.9	3.1	3.0	2.0	2.8	3.0	2.4	3.4	3.0	2.4	2.4	2.8	2.4	2.8	3.1
Rural	1.5	2.7	0.5	2.5	2.4	3.2	3.0	3.1	3.3	4.0	8.8	5.4	3.8	4.8	5.4	2.8	3.3	3.8	3.3	4.5	4.4
Non Poor	4.3	4.5	5.1	4.3	5.2	5.4	4.5	4.4	5.1	4.1	4.7	4.7	3.8	4.1	4.8	4.0	4.2	4.1	4.2	4.5	4.8
Races																					
Black	1.8	1.8	2.4	2.2	2.2	2.7	1.8	2.5	2.4	1.8	2.2	2.5	2.1	2.4	3.3	1.4	1.7	1.5	1.8	2.2	2.5
White	4.4	4.7	5.1	4.4	5.4	5.5	4.5	4.5	5.2	4.2	4.8	4.7	3.9	4.3	4.8	4.3	4.4	4.3	4.3	4.7	4.8
Medicaid Eligible																					
Yes	3.1	3.0	3.2	4.2	4.8	4.8	3.5	3.8	3.8	2.5	3.8	3.4	2.7	2.8	3.8	2.7	3.8	2.7	3.1	3.8	3.7
No	4.4	4.8	5.3	4.2	5.2	5.3	4.4	4.4	5.0	4.1	4.7	4.7	3.8	4.3	4.8	4.1	4.2	4.3	4.2	4.8	4.8
Disabled																					
Yes	8.2	8.4	8.9	5.8	8.8	7.8	5.8	5.3	6.0	3.8	5.2	5.8	4.7	5.5	6.7	4.2	5.1	4.8	4.8	5.4	6.1
No	4.0	4.2	4.8	4.1	5.0	5.1	4.1	4.2	4.8	4.0	4.5	4.4	3.8	4.0	4.5	3.8	4.0	4.0	4.0	4.3	4.6
Age																					
65+ Years	0.7	1.3	1.1	0.7	0.8	0.8	0.5	1.2	0.7	0.7	0.8	0.7	0.5	0.8	1.0	0.5	0.5	0.8	0.6	0.8	0.8
Less than 65	4.3	4.4	5.1	4.3	5.2	5.4	4.4	4.4	5.0	4.1	4.7	4.7	3.8	4.2	4.8	4.0	4.2	4.2	4.1	4.8	4.8
Area of Residence																					
Rural	3.3	2.3	3.7	4.8	5.5	5.8	3.8	4.6	4.4	3.8	5.1	4.7	3.4	4.0	4.8	4.0	4.3	4.1	3.8	4.5	4.6
Urban	4.2	4.4	5.0	4.2	5.1	5.2	4.4	4.2	5.0	4.0	4.5	4.6	4.1	4.3	4.6	3.7	3.8	4.0	4.2	4.4	4.8
ALL BENEFICIARIES	4.2	4.4	5.0	4.2	5.1	5.3	4.3	4.3	4.9	4.0	4.6	4.6	3.8	4.1	4.7	3.8	4.1	4.1	4.0	4.5	4.7

a Significantly different from the comparison group at the 0.05 level

b Significantly different from 1991 to 1993 at the 0.05 level

SOURCE: CHER analysis of Medicare Part A claims and denominator file for a sample of beneficiaries

TABLE VII-B-15

ASSIGNMENT RATE BY MFS PAYMENT CHANGE AREAS AND VULNERABLE POPULATION GROUPS, 1991-1992 (age - sex adjusted per beneficiary)

Vulnerable Population	MFS PAYMENT CHANGE AREAS: Reduction 1		2		3		4		5		Increase 6		ALL AREAS	
	1991	1992	1991	1992	1991	1992	1991	1992	1991	1992	1991	1992	1991	1992
Shortage Areas														
All Shortage Combined	72.0%	73.9% a	69.5%	72.7% a	68.7%	70.9% b	67.5%	71.3% a	62.9%	66.9% a	65.4%	70.6% a	66.6%	70.3% a
Urban	72.4	74.3 a	71.2	74.2 a	69.8	71.7 a	70.5	74.1 a	72.5	75.0 a	62.1	66.8 a	70.4	73.2 a
Rural	47.6	52.1 a	64.3	68.3 a	61.9	66.0 a	62.2	66.8 a	58.4	63.3 a	67.2	72.7 a	61.2	65.8 a
Non-Shortage	72.1	75.4 b	67.2	71.2 b	66.7	70.8 b	64.1	68.7 b	63.9	68.5 b	60.5	66.0 b	65.0	69.4 b
Poor Areas														
All Poor Combined	83.9	83.9	71.3	74.3 a	72.2	74.5 a	69.9	72.9 a	74.2	77.3 a	66.1	72.8 a	71.5	74.3 a
Urban	84.3	84.4	70.8	73.9 a	72.8	74.7 a	69.8	72.4 a	75.5	78.1 a	63.4	67.2 a	71.8	74.1 a
Rural	57.8	56.8	77.2	79.8 a	68.8	73.1 a	70.7	75.5 a	72.2	76.2 a	69.8	74.3 a	70.4	74.8 a
Non Poor	71.4	74.9 b	67.1	71.1 b	66.2	70.2 b	63.8	68.5 b	63.3	68.0 b	60.1	65.7 b	64.8	69.1 b
Races														
Black	75.9	76.0	72.8	75.4 a	72.1	74.4 a	71.7	74.4 a	75.1	78.1 a	70.1	73.8 a	72.3	75.0 a
White	72.0	75.5 b	67.3	71.4 b	66.8	70.8 b	64.1	68.8 b	63.8	68.2 b	60.1	65.8 b	64.9	69.5 b
Medicaid Eligible														
Yes	80.7	80.8	69.0	80.2 a	66.7	69.8 a	66.8	66.4 a	66.6	80.6 a	66.4	80.2 a	66.2	69.7 a
No	69.4	73.1 b	64.9	69.2 b	64.1	66.3 b	62.3	67.0 b	61.4	66.2 b	58.4	62.3 b	62.6	67.2 b
Disabled														
Yes	77.0	79.8 a	74.0	77.0 a	73.2	76.4 a	71.1	74.7 a	70.9	75.0 a	68.0	72.5 a	71.7	75.3 a
No	71.7	75.0 b	66.8	70.7 b	66.1	70.0 b	63.5	68.2 b	63.0	67.8 b	59.7	65.3 b	64.4	68.8 b
Age														
65+ Years	79.9	83.5 a	74.7	78.9 a	75.7	79.5 a	72.3	77.1 a	71.9	77.0 a	70.3	75.5 a	73.4	77.9 a
Less than 65	71.9	75.2 b	67.1	71.1 b	66.8	70.4 b	64.1	68.8 b	63.8	68.1 b	60.4	65.9 b	64.9	69.2 b
Area of Residence														
Rural	66.4	70.3 a	66.5	72.1 a	62.6	68.0 a	62.6	67.8 a	58.7	63.8 a	62.1	67.7 a	61.5	66.7 a
Urban	72.2	75.8 b	67.4	71.1 b	67.6	71.2 b	64.8	69.2 b	66.4	72.5 b	57.3	62.5 b	66.5	70.5 b
ALL BENEFICIARIES	72.1	75.4 b	67.3	71.3 b	66.8	70.7 b	64.3	68.8 b	63.8	68.4 b	60.7	66.2 b	65.1	69.5 b

a Significantly different from the comparison group at the 0.05 level

b Significantly different from 1991 to 1992 at the 0.05 level

SOURCE: CHER analysis of Medicare Part B claims and denominator file for a sample of beneficiaries

Appendix VIII

Trends in Utilization, Access, and Satisfaction with Care Among Noninstitutionalized Medicare Beneficiaries: 1991-93

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Appendix VIII

Trends in Utilization, Access, and Satisfaction with Care Among Noninstitutionalized Medicare Beneficiaries: 1991-93

INTRODUCTION

This appendix draws on the Medicare Current Beneficiary Survey (MCBS), a survey of Medicare beneficiaries sponsored by the Health Care Financing Administration (HCFA), that gathers detailed information on utilization, access, and satisfaction within the Medicare population. The MCBS is designed as a 4-year panel, enabling longitudinal analysis of access impacts.

This analysis compares utilization, access, and satisfaction among Medicare beneficiaries from 1991 through 1993, that is, the year prior to, the year of, and the year after the introduction of the Medicare fee schedule (MFS). The analysis focuses on populations that may be particularly vulnerable to shifts in the supply of physician services resulting from the MFS, defined according to health status, income level, supplemental insurance coverage, and expected size of the payment change.

The MCBS offers a number of advantages over Medicare claims data. First, claims data do not contain complete utilization data for enrollees in health maintenance organizations (HMO). The MCBS contains self-reported information on access and utilization by all Medicare enrollees. Second, it gathers information on utilization of covered and noncovered services. Claims would reflect covered services only. Third, the MCBS gathers detailed information on health status, supplemental insurance coverage, income, and other demographic characteristics that may explain variations in utilization within the Medicare population. Fourth, the MCBS offers a variety of access and satisfaction indicators that can be tracked over time.

The principal disadvantage of the MCBS may be its reliance on self-reported data. To the extent that Medicare beneficiaries (or their proxies) have limited recall of health care events, data reliability is reduced. To compensate, both self-reported utilization data from the MCBS and matched Medicare claims data for the survey participants are included in the analysis. Together, the survey and claims data provide a richer understanding of the determinants of access and utilization.

METHODS

Sample

This analysis is based on data from Rounds 1, 4, and 7 of the MCBS. Round 1 was conducted between September and December 1991, Round 4 was fielded 1 year later, and Round 7 still another year later. The Round 1 sample included 11,735 interviews with individuals residing in the community; of these, 8,293 (71 percent) responded to Round 7. This analysis includes

(N=7,651) noninstitutionalized Medicare beneficiaries who participated in all three rounds of the survey. Medicare beneficiaries in Puerto Rico are excluded, as well as those whose Medicare coverage dates were unknown (based on HCFA's administrative data). Those who died prior to January 1, 1995 also are excluded. Thus, the sample contains a *panel* of continuously enrolled Medicare beneficiaries 1991 through 1993. Those who died in 1994 were excluded because they would have been high-volume users in 1993. In other words, a source of bias in the 1993 results, which would inflate the level of use in 1993 relative to that in 1991 (since 1992 deaths were omitted to create the panel), was excluded.

Construction of Utilization Measures

Measures of health care utilization are based on self-reported survey data and administrative claims data. Probability of physician use is based on self-reports; however, the data collection procedures differed for the 1991 versus 1992 and 1993 data. In Round 1 of the survey, respondents were asked whether they had a visit to an emergency room (ER), outpatient department (OPD), or physician during the *previous year*. The 1992 and 1993 data reflect the aggregation of responses from Rounds 2, 3, and 4 for 1992 (and Rounds 5, 6, and 7 for 1993) in which respondents were asked whether they had made a visit during the *4-month reference period* for each round. The 1992 and 1993 data indicate consistently higher rates of utilization than the rates from 1991 data. This may be a function of the shorter recall periods for the 1992 and 1993 data.

Barriers to care are measured by whether respondents reported they had a health problem in the previous year and did not receive care. The indicator excludes those who said they did not receive care because the problem was not serious. Financial barriers are identified based on Westat's (the MCBS contractor) coding of the open-ended verbatim responses, including "cost too much," "charge more than Medicare will pay," and "doctor does not accept Medicare."

Indicators of the *level* of outpatient use as well as rates of inpatient use were derived from Medicare claims, using 1991 through 1993 National Claims History (NCH) data for individuals in the MCBS sample. Individuals who were enrolled in HMOs were excluded from all of the calculations. In addition, individuals with only Part A Medicare coverage were excluded from calculations of office visits and consultations, and individuals with only Part B Medicare coverage were excluded from the calculations of inpatient admission rates.

The NCH Physician/Supplier file was used to count the number of office visits and consultations by specialty. The number of services with Current Procedural Terminology (CPT) -4 procedure codes 90000-90080 and 90600-90643, and office as the place of service, were aggregated for each individual by specialty.[1] Visits to three categories of physician specialty were identified: primary care (family practice, general medicine, internal medicine, and osteopathy), medical specialties (allergy, cardiology, dermatology, gastroenterology, pulmonary disease, geriatric medicine, nephrology, infectious disease, endocrinology, rheumatology, hematology/oncology),

[1]Beginning in 1992, the new CPT-4 codes for evaluation and management services also were used: 99201-99215, 99241-99255, and 99261-99263.

and other. Office visits/consultations to non-physician specialties were counted separately (e g , psychologists, social workers, podiatrists, optometrists, chiropractors).[2]

Admissions to acute care hospitals were identified through NCH inpatient hospital and skilled nursing facility records for the MCBS population. Special attention is focused on ambulatory care sensitive (ACS) admissions, that is, hospitalizations which potentially could be avoided if adequately treated on an outpatient basis (Billings, 1992). The definition of ACS conditions was adapted to the elderly population for the purpose of this analysis.[3] An admission was counted as an ACS admission if the primary diagnosis was an ACS diagnosis. However, transfer cases from nursing homes or other institutions were excluded from the count of ACS admissions since these conditions may not reflect lack of ambulatory care.

Statistical Procedures

Because of the complex sample design (clustering, stratification, and unequal probabilities of selection), it is inappropriate to use statistical procedures that assume simple random sampling. Weighting and standard error adjustments have been made using SUDAAN software, developed by Shah *et al.* (1991).[4] These data have been age-adjusted using the direct method of standardization. To control for aging of the population, all statistics are standardized according to the baseline (1991) age distribution. Tests of statistical significance were conducted both cross-sectionally and longitudinally.

RESULTS

Characteristics of the Noninstitutionalized Medicare Population

The MCBS shows that the noninstitutionalized Medicare population was comprised primarily of elderly persons (65 years of age or over), who accounted for 92 percent of the enrollees in 1993 (Table VIII-1). Women represented over half (57.8 percent) of all noninstitutionalized enrollees;

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[2]In 1992, physicians were given an opportunity to redesignate their specialty. In general, there was a trend toward increasing medical specialization, with internal medicine and general practice experiencing a net loss in the number of physicians designating this specialty. Medical specialties with a net gain include allergy, cardiology, dermatology, gastroenterology, pulmonary disease, geriatric medicine, nephrology, infectious disease, endocrinology, rheumatology, and hematology/oncology. Thus, some of the changes in the average number of visits, by specialty category, could be an artifact of the redesignation of self-reported specialties.

[3]The following conditions were included: angina, without surgical procedure; bacterial pneumonia, without mention of sickle cell disease; cellulitis (without major surgical procedure); skin graft with cellulitis; chronic obstructive pulmonary disease (including chronic bronchitis, emphysema, asthma, bronchiatasis, chronic airway, obstruction not classified elsewhere); congestive heart failure; diabetes; hypertension; hypoglycemia; kidney/urinary tract infection; tuberculosis, without mention of Human Immunodefiency Virus infection.

[4]Weighted means and proportions and their associated standard errors were generated with PROC DESCRIPT. All means and proportions are age-adjusted using the direct method of standardization. T-tests were performed in Excel, using the weighted means and adjusted standard errors. Cross tabulations were performed with PROC CROSSTAB. Chi-square tests are generated by the procedure. Logistic regression analysis was performed with PROC RLOGIST. Beta coefficients, adjusted standard errors, and adjusted p-values are produced. Weighted least squares regression was performed on the natural logarithm of visit counts using PROC REGRESS.

men, however, represented a disproportionate share of the disabled. About 85 percent of the population was non-Hispanic white and the remaining 15 percent included individuals of other races/ethnicities. Minorities were disproportionately represented among the disabled (under 65 years of age). The disabled had lower educational attainment, perhaps reflecting the inclusion of dependent adults who were disabled in childhood (Lubitz and Pine, 1986). The elderly were more likely than the disabled were to have close social supports, such as a spouse or child.

As might be expected, the disabled had a lower income distribution, with 86 percent having incomes of $20,000 or less per year (compared with 76 percent of the elderly). Similarly, the availability of supplemental insurance coverage varied, with 24 percent of the disabled, but only 7 percent of the elderly having no supplemental coverage. In addition, the disabled were more than 4 times more likely than the elderly were to have joint Medicaid eligibility. About three-fourths of the elderly, but only one-third of the disabled, had private Medi-gap coverage.

Nearly 60 percent of the noninstitutionalized Medicare population resided in areas that were expected to experience more than a 2 percent reduction in fees. About 12 percent were in areas expecting a small fee reduction (2.01-5.00 percent), one-fourth (28 percent) were in medium fee reduction areas (5.01-10 percent), and nearly 20 percent were in high fee reduction areas (greater than 10 percent). Of the remainder, 13 percent were in areas that were expected to have increases of 2.01 to 5.00 percent and 19 percent were in areas that were expected to have increases greater than 5 percent, while 9 percent resided in areas expecting no more than a 2 percent change in either direction. The disabled were slightly more likely than the elderly were to live in areas with expected increases in average Medicare fees.

The disabled were in poorer health than the elderly were, as measured by both perceived health status and limitation of activity. For example, 23 percent of the disabled versus 6 percent of the elderly self-reported their general health status as "poor". Moreover, two-thirds of the disabled, but only one-third of the elderly, reported any limitation in the Instrumental Activities of Daily Living (IADLS) or Activities of Daily Living (ADL). Finally, the geographic distribution was fairly similar between the two groups, although the disabled were slightly more likely than the elderly were to reside in rural areas.

Descriptive Analysis of Changes in Utilization, Access, and Satisfaction

Table VIII-2 presents data on utilization, access, and satisfaction indicators for 1991 through 1993. Multiple indicators are being tracked to develop a comprehensive picture of the impact of the MFS on beneficiary access to care. Significant time-series differences are denoted by a letter symbol on the table.

The share of beneficiaries whose regular source of care was a physician's office increased from 66.4 percent in 1991 to 71.4 percent in 1993. Concurrently, the share of beneficiaries that reported having a regular physician in a non-office-based setting (e.g., clinic) decreased from 19.9 percent in 1991 to 16.3 percent in 1993.

The likelihood of physician use increased significantly from 1991 to 1992 and then again from 1992 to 1993. For example, 86.1 percent of Medicare beneficiaries had a physician visit in 1991, 90.1 percent had a physician visit in 1992, and 91.2 percent had a physician visit in 1993.

The likelihood of ambulatory visits to hospital-based settings also increased significantly over the 3-year time period.[5] In 1991, 27 percent of Medicare beneficiaries had a visit to an OPD compared with 36 percent of those in 1993. Similarly, the percent with an emergency room visit increased from 17 percent to 21 percent. An important question to be addressed in the multivariate analysis is whether the increased use of hospital-based providers is associated with the implementation of the MFS.

According to Medicare claims data for the survey sample, the average number of office visits per user increased significantly from 6.1 in 1991 to 6.6 visits in 1993. Thus, both office utilization rates and levels increased significantly between 1991 and 1993.

The rate of hospitalization increased between 1991 and 1993, from 13.7 percent in 1991 to 16.4 percent in 1993 and the percent of admissions with an ACS condition nearly doubled, from 2.9 percent in 1991 to 5.4 percent in 1993. The reason for this trend is unclear especially in light of the increase in physician use in all three ambulatory settings.

The likelihood of a flu shot increased between 1991 and 1993, from 40.4 percent in 1991 to 50.2 percent in 1993. Effective May 1, 1993, flu injections became reimbursed under the Medicare program , suggesting that the rate may increase even higher in the future.

Mammography screening among women decreased from 1991 to 1992 (40 percent in 1991 versus 34.3 percent in 1992) and was stable (34.2 percent) in 1993. However, this is likely a function of the reimbursement regulations and not necessarily an indicator of declining access. Effective January 1, 1991, screening mammography was added as a new Medicare Part B benefit. The frequency of screening is based on a woman's risk of developing breast cancer, as well as her age. For women 65 years of age or older, the procedure is limited to one per 23-month period. Thus, women who were screened in 1991 would not be rescreened until 1993 unless they were at high risk.

Routine Pap smears were reimbursed under the Medicare program as of July 1, 1990, and are covered at 3-year intervals, except for women at high risk of developing cervical cancer. This would explain, in part, the decrease in the percent of women receiving a Pap smear in 1991 (49 percent) versus in 1992 (33 percent) and in 1993 (32 percent).

Perceptions of barriers to care have decreased from 9.6 percent in 1991 to 6.7 percent of the noninstitutionalized Medicare population in 1993. This may suggest that *overall* concerns about access following the implementation of the MFS are unfounded. Finally, satisfaction with care

[5]Significant increases in ER and OPD use were exhibited in both the self-reported survey data and the claims data.

seems to have improved significantly along all four dimensions (quality, availability, ease, and costs) measured [6] The most significant improvement is observed in the level of satisfaction with the costs of care. Perhaps, reductions in Medicare co-payments resulting from the fee schedule account for increased satisfaction with costs. Additionally, reductions in extra billing and increases in physician participation rates may account for increased satisfaction with costs.[7]

Variations among the Disabled and Elderly Populations

The changes in utilization, access, and satisfaction described previously do not hold for all sub-groups of Medicare beneficiaries. In this section of the appendix and those that immediately follow, changes across several beneficiary characteristics are described.

While the Medicare population as a whole showed a trend towards a physician's office as the regular source of care, these gains were experienced by the elderly population alone (Table VIII-3). (Significant cross-sectional differences are indicated by an asterisk; significant time-series difference are indicated by a letter symbol. The main focus is on the time trends.) The disabled remained significantly less likely to have a private physician as the regular source.

The likelihood of ambulatory visits to hospital-based settings increased significantly for both the elderly and disabled over the 3-year time period. Although the elderly had a larger percentage increase in likelihood of use of the OPD than the disabled had, their rates of probability of use in 1993 were about the same--roughly 36 percent. The elderly's use of the ER increased significantly between 1991 and 1993, from 16 percent in 1991 to 20 percent in 1993. Although the disabled's likelihood of use of the ER did not change significantly between 1991 and 1993, their likelihood of usage was 41 percent higher than that of the elderly in 1993. In general, ER and OPD use was higher among the disabled than among the elderly, perhaps because of the complex medical needs of the disabled or because of other barriers to office-based care they experience.

According to Medicare claims data for the survey sample, the overall average number of office visits per user increased significantly among the elderly, from 6.1 visits in 1991 to 6.6 visits in 1993. Similarly, the likelihood of physician use increased significantly between 1991 and 1993 for the elderly. For example, 86 percent of elderly Medicare beneficiaries had a physician visit in 1991 versus 91 percent of those in 1993. Thus, both utilization rates and levels have increased significantly between 1991 and 1993 for the elderly. But, there were no statistically significant changes in the likelihood of physician use or in levels of utilization by the disabled between 1991 and 1993.

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[6]Observed increases in satisfaction may be an artifact of the survey itself, whereby respondents' perceptions of the program are affected by the survey intervention, rather than by actual changes in the program. This is known as the Hawthorne effect.

[7]The maximum balance bill was reduced from 125 percent of the allowed charge in 1991, to 120 percent in 1992, and to 115 percent in 1993. In addition, the physician participation rate rose from 44.0 percent in 1991 to 48.3 percent in 1992.

All of the significant changes in inpatient admission rates, and more specifically, ACS admission rates, were accounted for by the elderly The rate of hospitalization for the elderly increased between 1991 and 1993, from 13 4 percent in 1991 to 16 4 percent in 1993 and the percent of admissions with an ACS condition doubled from 2 8 percent in 1991 to 5 6 percent in 1993

The likelihood of a flu shot among the elderly and disabled increased between 1991 and 1993--the rate of increase was higher among the elderly, presumably because they are at higher risk, as a group. The rates of preventive breast cancer screening were higher for elderly women than they were for disabled women. However, preventive mammography screening among elderly women decreased between 1991 and 1993 (41 percent in 1991 versus 35 percent in 1993). Finally, Pap smears decreased for both elderly and disabled women, but more so for elderly women.

Perceptions of barriers to care have decreased for the disabled and the elderly. The disabled, however, reported such barriers nearly 3 times more often than the elderly. Satisfaction with care seems to have improved for both the elderly and disabled along all four dimensions measured. The disabled, however, continued to be less satisfied with their medical care than the elderly. For example, 74 percent of the disabled compared with 84 percent of the elderly were satisfied with the costs of medical care in 1993.

Variations by Level of Medicare Fee Reductions

A key policy interest is whether patterns of utilization, access, and satisfaction changed significantly in areas that had the highest Medicare payment reductions or payment increases (Table VIII-4). Medicare payment changes are captured by an aggregate measure of the expected percentage difference between the 1996 MFS payment (fully phased-in) and the 1991 allowed charge. The variable was constructed by HCFA and does not control for changes in the mix of services provided. For purposes of this appendix, however, it serves as a reasonable proxy for the magnitude and direction of payment changes that would be experienced or expected by physicians in an area.

The probability of having a physician's office as the regular source of care increased both in fee reduction and fee increase areas. All areas experienced significant increases in the likelihood of any type of physician visit between 1991 and 1993. The rates of increase were about the same across all areas. (As discussed previously, the higher *reported* rates of physician visits in 1992 and 1993 may be an artifact of shorter recall periods used in the MCBS rounds subsequent to the first round.) The likelihood of an OPD visit also increased significantly across all areas. The likelihood of an ER visit increased for areas expecting a 5- to 10-percent *reduction* in fees and for areas expecting a 2- to 10-percent *increase* in fees.

The number of visits per user was highest pre-MFS (1991) in areas with the largest expected reductions in average Medicare fees. The areas expecting the greatest fee reductions tend to be the large metropolitan statistical areas (MSAs) in California, Arizona, and Florida--areas with large numbers of retirees and with relatively high proportions of beneficiaries who are financially well off. There were no statistically significant changes in average number of *total* visits per user for any of the areas between 1991 and 1993 For the sub-categories of medical specialists and of

non-physicians, however, there were a few increases in the number of visits, but without any discernible pattern by area.

Satisfaction with the quality, availability, and convenience of medical care remained high in all areas. Interestingly, Medicare beneficiaries reported greater satisfaction in 1993 with the availability of care on nights and weekends. Satisfaction with the costs of care also increased significantly in all areas, but paradoxically, the rate of change was highest in the areas expecting the largest increases in fees.

Table VIII-5 shows data on attitudes toward the usual source of care according to the level of fee schedule changes expected in 1996 when the MFS is fully phased-in. In general, attitudes are extremely positive, with the most positive attitudes concerning physician competency and training. Between 1991 and 1993, Medicare beneficiaries noted less often that their doctor seemed to be in a hurry, that their doctor does not discuss or explain health problems, or that their doctor acts as if he/she is doing them a favor. Most of the improvement in attitudes occurred in areas with the largest expected reductions in fees. Improved attitudes may be a function of higher compensation for primary care services and/or the restructuring of reimbursement for evaluation and management services.

Variations by Health Status

Health status is generally the strongest predictor of health care utilization. In 1991 there was little difference in the likelihood of having a physician office as the regular source of care according to health status (Table VIII-6). However, the likelihood of having a physician office as the regular source of care increased between 1991 and 1993 for all groups, except those with excellent health.

Data in Table VIII-6 shows that (as might be expected) the probability and volume of physician use increased as health status declined. For an example, 83 percent of those in excellent health made a visit in 1993 compared with 95 percent of those in poor health. In addition, the average number of visits per user differed by nearly two-fold (4.9 for those with excellent health versus 8.9 for those with poor health). Thirteen percent of those in excellent health compared with 43 percent of those in poor health made an ER visit. Similarly, 8 percent of those in excellent health versus 39 percent of those in poor health had a hospitalization in 1993. The rate of ASC admissions ranged from 2.3 percent for those in excellent health to 16.3 percent for those in poor health in 1993.

Between 1991 and 1993, the likelihood of a physician visit increased for all Medicare beneficiaries, except for those in poor health where there was no significant change. ER and OPD use increased significantly for all groups, except for beneficiaries in very good health.

Beneficiaries in excellent health had the lowest influenza immunization rates for all 3 years. Rates of immunization for a given year, however, did not uniformly increase with the increase in health care needs--a finding that is not consistent with the guidelines (as defined in U.S. Preventive

Services Task Force, 1989). Nevertheless, all groups had significantly higher rates of immunization in 1993 than they had in 1991.

Barriers to care and satisfaction with care also varied by health status. About 1-in-54 enrollees in excellent health reported a barrier in 1993 compared with about 1-in-5 of those in poor health. Only beneficiaries in very good, good, and fair health reported a decrease in the extent of barriers to care between 1991 and 1993.

Satisfaction with quality, availability, convenience, and costs also declined with health status. In 1991, 81 percent of those in excellent health were satisfied with the costs of medical care compared with only 51 percent of those in poor health. However, this gap narrowed over the 2-year time period. Those in poor health--high users of medical care--had a 22-percentage point increase in satisfaction between 1991 and 1993.

Variations by Income and Supplemental Insurance Coverage

Finally, changes in utilization according to income level and type of supplemental insurance coverage were examined. The likelihood of having a physician's office as the regular source of care was higher at baseline for those with incomes greater than $35,000 than for those with incomes under $10,000 (Table VIII-7). The two lowest income groups, however, experienced significant increases between 1991 and 1993 such that the difference between income groups was no longer statistically significant in 1993.

The probability of having a physician visit rose with income through the 3-years time-series. By 1993, there were no income differentials in the overall number of visits per user. This suggests that low income may serve as a barrier to *entering* the health care system, but those who do obtain care are not lower users. Indeed, use of primary care physician services was highest among low-income beneficiaries.

Low-income beneficiaries also used the ER more than those with higher incomes and were less likely to receive preventive care. Low-income beneficiaries continued to report a higher incidence of barriers (despite significant improvements in this indicator) and the majority of unmet need was related to financial factors. Consistent with these results is a slightly higher likelihood of hospitalization with an ACS condition. Finally, although satisfaction levels increased throughout the Medicare population, lower income enrollees remained less satisfied with the costs and convenience of medical care.

Medicare beneficiaries with public or private supplemental insurance coverage were far more likely to see a physician than were those with no supplemental coverage (Table VIII-8). In 1993, 79 percent of those with Medicare only made at least one physician visit to any setting compared with 92-94 percent of those with supplemental coverage. It is not clear whether this is a function of less "need" for care or less financial access to care. However, other indicators show that the Medicare-only group was least likely to have a regular source of care and was most likely to experience a financial barrier. The Medicare-only group also had the lowest rating of satisfaction with the costs of care.

Those with dual Medicare and Medicaid coverage had much higher ER use than those with Medicare coverage only. In 1993, nearly one of every three dual enrollees made an ER visit compared with one-in-five enrollees with no supplemental coverage. Again, this could be attributable to poorer health status; nevertheless, dual enrollees were least satisfied with the ease of getting to the doctor. This group also had the highest rate of admissions for ACS conditions despite the fact that dual enrollees had the largest increase in the likelihood of having a physician office as a regular source of care.

Multivariate Analysis of Determinants of Utilization and Satisfaction

Overview of the Model

While descriptive analysis examines one variable at a time to determine its impact on utilization and access, multivariate analysis simultaneously controls for multiple factors affecting utilization. Thus, the effect of an individual factor (such as the effect of income or insurance status) on utilization is determined independent of other factors, that is, holding other factors constant. An important focus of the multivariate analysis is to determine patterns of utilization in areas with different degrees of payment change following implementation of the MFS in 1992, isolating the effect of such factors as demographic, economic, and health status characteristics.

Logistic regressions were performed on the probability of a physician visit in any setting (any visit), ER visit, OPD visit, inpatient admission, and satisfaction with quality, cost, and availability of care.[8] In addition, weighted least squares regression was performed to determine if the number of visits per user had changed from 1991 to 1993, after controlling for various factors.

The unit of analysis is a person-year. Thus, data for each beneficiary were pooled for 1991, 1992, and 1993. To isolate the effect of the MFS, three sets of variables are used:

- The first, a pair of year dummy variables, captures the secular trend between 1991 and 1993.
- The second captures the cross-sectional differences across geographic areas during the baseline period (1991) according to the *expected* level of the payment change.
- The third, an interaction term between the yearly trend and level of payment change, indicates whether the MFS has had a significant impact on utilization and satisfaction, above and beyond the secular trend, and independent of the pre-existing differences across areas receiving differential payment changes.

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[8]Unlike OLS regression coefficients, logit regression coefficients are not derivatives of a change in probability. To obtain, for logit regressions, the derivative of probability for variable k, it is necessary to multiply its regression coefficient by $e^{x'}/(1 + e^{x'})^2$, where x' is the dot product of x' (a vector of the means of the independent variables) and (a vector of regression coefficients). Since x' usually differs for each regression, regression coefficients for a given independent variable from different regressions cannot be directly compared to ascertain the relative size of the derivatives--it is necessary to transform them first by the indicated formula (Amemiya, 1981).

In addition to the fee schedule indicators, the multivariate model includes predisposing, enabling, and need characteristics that are hypothesized to affect the probability or volume of use. Predisposing characteristics include age, sex, race/ethnicity, educational status, and living arrangement. Enabling characteristics include financial variables (income status, supplemental coverage) and physician availability (physicians per capita in the county of residence). Need characteristics include both perceived health status and the level of functional dependency. The model also controls for geographic location (Census division and urban/rural location)[9].

To understand how to interpret the time trend and MFS effects, consider the regression for satisfaction with costs (Table VIII-9). The statistically significant positive coefficients for the year dummy variables 1992 (=.4701) and 1993 (=.745) indicate that satisfaction was higher in both of these years than it was in 1991 and was highest in 1993. These time trend effects indicate what would have occurred to the level of satisfaction regardless of whether or not the MFS had been implemented. The coefficient on the Medicare Payment Change variable is not statistically significant and thus indicates that satisfaction with costs did not vary in the baseline year (1991) by expected average fee changes across areas. Finally, the coefficients of the interaction of the year dummy variables with the expected Medicare Payment Change variable indicates that there was a *transitory* effect of the MFS in 1992 that did not last into 1993.[10] The negative coefficient for the 1992 MFS effect is interpreted as follows. In areas with expected *increases* in average fees, satisfaction with costs declined, while in areas with expected *reductions* in average fees, satisfaction with costs improved. (Unlike other regressions, the signs of the coefficients in the barriers to care regression have the opposite interpretation because of how the dependent variable was constructed.) The Medicare Payment Change variable is an average of the expected change in average fees for *all* physicians in an area. Its value, thus, reflects the specialty mix of physicians in the area. Hence, as a measure of expected change in fees, it is not specific to a selected type of provider or service rendered.

Basic Multivariate Results

The main multivariate logistic and ordinary least squares (OLS) regression results are presented in Table VIII-9. There was little variation in beneficiary utilization, access, and satisfaction, by MFS area, prior to the implementation of the MFS (as reflected by the coefficients on the Medicare Payment Change Variable). There were, however, a few exceptions. For instance, prior to the implementation of the MFS, beneficiaries who lived

[9] As might be expected, the geographic variables were correlated with the Medicare payment change dummy variables. However, the results on the fee schedule variables are not altered with the inclusion of the geographic variables.

[10] If the regression coefficient is not statistically significant for the 1993 dummy variable, then regardless of the statistical significance of the 1992 dummy variable, there is no *permanent* trend effect.

in areas that had expected increases in average Medicare fees were more likely to have a regular source of care than were beneficiaries living in areas that had expected reductions. That is, beneficiaries living in areas in which average Medicare fees were relatively low--which could have lowered the likelihood of having a regular source of care--actually had a higher probability of having a regular source of care than were beneficiaries living in areas in which the average Medicare fees were relatively high. Consistent with this finding is that prior to the implementation of the MFS, beneficiaries living in areas with expected increases in average Medicare fees reported greater satisfaction with the availability of care than did beneficiaries living in areas with expected reductions. There was no variation by MFS area in the probability of any physician visit, in having an outpatient visit, or in having an ER visit. The number of physician visits/consults, however, was lower in areas with the largest expected MFS increases and was higher in areas with the largest expected MFS reductions.

Implementation of the MFS usually did not affect beneficiary utilization, access, or satisfaction (as reflected by the interaction term).[11] For instance, implementation of the MFS did not affect the probability of having a regular source of care, the probability of any physician visit, an outpatient visit, an ER visit, or an inpatient stay. Nor were the number of physician office visits/consults significantly affected. Changes in satisfaction with the costs of care in 1992 did not continue into 1993. After the MFS was implemented, barriers to care, as reported by beneficiaries, declined in areas with expected fee increases and increased in areas with expected fee reductions.

Even though there was little impact associated with the MFS, beneficiary utilization, access, and satisfaction usually increased in 1992 and 1993 because of the secular time trend. Most of the increases in the probability of utilization or in the degree of satisfaction ranged from 1 to 5 percentage points, although some were higher. The reduction in 1992 in the probability of having a regular source of care did not last into 1993.

Utilization, access, and satisfaction almost always differ by perceived (self-reported) health status. For instance, the probability of having a regular source of care, physician visit, an outpatient visit, or an ER visit increased as health status declined. Satisfaction with quality, availability, and costs of care declined as health status declined. Those with poorer health more often reported barriers to care than did beneficiaries with better health.

Also, utilization, access, and satisfaction almost always differ by level of dependency. The probability of having a regular source of care, of a having physician visit, of having an outpatient visit, or of having an ER visit increased as the level of dependency increased (up to four ADLs), but not beyond (5-6 ADLs), because visits are limited at very high levels of inactivity. Satisfaction with quality, availability, and costs of care declined as the level of dependency increased, but only up to four ADLs. Satisfaction with quality of

[11] Some MFS impacts for selected population groups were found.

care, however, was lowest for those with the highest level of dependency (5-6 ADLs). Barriers to care are reported more often as the level of dependency increases.

The effect of age varies depending on the type of utilization. As age increases, the likelihood of an ER visit and inpatient stay decreases, but the rate of decline slows with age (representing a U-shaped relationship). For outpatient visits and the number of physician visits/consults, the relationship was of an opposite nature (inverted U-shaped). Reported barriers to care increased with age, but the rate of decline slowed with age (representing a U-shaped relationship).

Relative to women, men were less likely to have a regular source of care. Not surprisingly, then, men were less likely to have any physician visits and to have fewer physician visits/consults. Perhaps this explains why men were more likely than women to have an ER visit or inpatient stay. Despite being less likely to have a regular source of care than women, men were less likely than women to report facing barriers to care.

Relative to white beneficiaries, black beneficiaries were more likely to have a regular source of care, to have an outpatient visit, and to have an ER visit. Conversely, white beneficiaries were more likely to have an inpatient stay. Black beneficiaries were less satisfied with the quality and the cost of care, and were less likely than white beneficiaries to report barriers to care.

Less educated beneficiaries (than those whose education went beyond high school) were less likely to have a regular source of care, a physician visit, and an outpatient visit. Less educated beneficiaries appeared to rely more heavily on the ER services than more educated beneficiaries. Somewhat surprisingly, the less educated were more likely to be satisfied with the availability and cost of care.

Compared to beneficiaries that live alone, those with a spouse were more likely to have a regular source of care, were less likely to report a barrier to care, were less likely to have an ER visit or an inpatient stay, and had fewer visits/consults. Married beneficiaries also were more satisfied with the quality of care provided, but not the cost of care. Those living with someone other than a spouse were less likely to have a physician visit and had fewer visits/consults than were those living alone.

The effect of income on utilization, access, and satisfaction does not vary uniformly. Relative to beneficiaries with incomes greater than $35,000 per year, those in the lowest income class ($10,000 or less) were more likely to report barriers to care and were less likely: to have a regular source of care, to have any physician visit, to have an outpatient visit, and to be satisfied with the quality and cost of care. Those in the next to the lowest income group ($10-20,000) had experiences similar to the lowest income group, except there were no significant differences in the likelihood of outpatient visits and in satisfaction with quality of care. While the probability of utilization did not differ from the highest

income group, those in the $20-35,000 income group were less satisfied with the quality and costs of care.

The presence of supplementary health insurance beyond the standard Medicare Parts A and B coverage had an effect (except for availability) on utilization, access, and satisfaction with care. Having *any* supplementary insurance increased the probability of having a regular source of care and of having a physician visit or inpatient stay, increased the number of visits/consults, and generally increased satisfaction. Moreover, those with supplemental insurance were less likely to report a barrier to care.

The higher number of physicians per capita did not affect the likelihood of any physician visit or the number of visits/consults. It did, however, increase the likelihood of an outpatient visit and decreased the likelihood of an ER visit. More physicians per capita also were associated with greater satisfaction with the quality and availability of care. There were no systematic effects on overall utilization, access, and satisfaction by census division or urbanicity.

Finally, regular source of care was included among the independent variables only for the regression on the number of visits/consults. Regular source of care was included in the weighted least squares regression because the access literature suggests that having a regular source may improve continuity and coordination of care. That is, having a regular source may decrease unnecessary utilization of outpatient clinics and ERs and may facilitate access to specialists. To test the impact of the MFS on the *level* of use, it is, thus, appropriate to control for the presence and type of regular source in the regression on physician visits/consults. Having a regular physician (regardless of place) increased the number of visits/consults with the strongest effect for those with a physician's private office as the usual source.[12]

Utilization, Access, and Satisfaction Within Special Populations

As for the regression results reported in Table VIII-9, no special provision was made to investigate potential differential effects of the MFS or time trends on special populations that might differ--from the Medicare population as a whole--in their ability to obtain medical care. To investigate possible differential effects, therefore, the regressions on the likelihood of any physician visit and the likelihood of facing barriers to care were re-estimated[13] after dividing the cohort of Medicare beneficiaries into sub-samples on the basis of Medicare eligibility and level of dependency, general health status, income, type of supplemental insurance, and race/ethnicity. In interpreting the results, it is important to remember that the number of included individuals--equal to the number of observations used in the regression divided by three--is often relatively low for a given year (e.g., about

[12] A regression that excluded regular source resulted in minor changes in other regression coefficients.

[13] The variable that was the basis for sub-dividing the sample also was dropped from the regression.

719 for the disabled group that does not have any ADLs in the regression on facing barriers). The focus of this section of the appendix is on the secular trend and MFS impact variables even though other factors may be important in explaining variations in utilization, access, and satisfaction.

Data in Table VIII-10 show the Medicare population divided into sub-samples on the basis of Medicare eligibility (disabled/elderly) and on the degree of dependency (no ADLs/one or more ADLs). The implementation of the MFS did not have a discernible effect on the probabilities of any physician visits and barriers to care for any of the four groups (based on the interaction term). The secular trend coefficients on the year dummy variables indicate that the likelihood of visiting a physician by the disabled with ADLs did not keep pace with other Medicare sub-groups. The elderly, but not the disabled, reported reductions in perceived barriers to care over time.

Data in Table VIII-11 show the Medicare population divided into those with poor or fair health versus those with excellent or very good health. Individuals who reported good health were not included in any of the regressions. There were no discernible MFS effects for either group. There were, however, some secular trends. The probability of a physician visit increased for both groups; moreover, those in fair/poor health reported lower barriers to care by 1993.

Data in Table VIII-12 show the Medicare population divided into a low-income group ($20,000 or less) and a high-income group (more than $20,000). There were no discernible MFS effects on the probability of a physician visit or of facing barriers to care for either income group. There were, however, some lasting secular time trend effects. For both low- and high-income groups, the probability of a physician visit increased. Similarly, both groups reported lower barriers to care.

Data in Table VIII-13 show the Medicare population divided into three groups: no supplemental health insurance, Medicare and Medicaid, and Medicare and private Medi-gap insurance. Beneficiaries who reported a combination of types of supplemental insurance were excluded from the regressions. The MFS had no impact on the probability of a physician visit for any of the three groups. The only MFS impacts were in lowering barriers to care for beneficiaries without any supplemental health insurance -- the effect, however, was transitory since it occurred only in 1992. The time trend results suggest that beneficiaries in all three groups had a higher probability of a physician visit in 1993 than they had in 1991. Moreover, those with supplemental insurance (Medicaid or private) reported fewer barriers to care over time.

Data in Table VIII-14 show that separate regressions were run for black and white beneficiaries--Hispanics and other ethnic groups were excluded from the split-sample regressions because of small sample sizes. There were no MFS impacts on the probability of a physician visit. There were, however, MFS impacts on barriers to care -- black beneficiaries reported lower barriers to care in 1992, while white beneficiaries reported

lower barriers to care in 1993. With regard to time trends, white beneficiaries had improved access (both measures), for black beneficiaries, access had *not* changed.

DISCUSSION

This appendix has analyzed utilization, access, and satisfaction within the Medicare population, before and after the implementation of the MFS. Several encouraging trends were found for the Medicare population as a whole. First, with one exception, there was no impact by the MFS on the regular source of care, the likelihood of a visit, the number of visits/consults, and the satisfaction with care. Only barriers to care, as reported by beneficiaries, were affected by the MFS --they declined in areas with expected fee increases and increased in areas with expected fee reductions. Second, the *time trend* results indicate a greater likelihood of utilization, a higher number of visits/consults by users, greater satisfaction with care, and fewer barriers to care. The time trend effects more than offset any MFS effects. Third, satisfaction with care seems to have improved along all four dimensions (quality, availability, convenience, and costs) measured. In addition to the MFS, other factors may account for greater satisfaction with costs, including higher physician participation rates and further limitations on balance billing. Fourth, attitudes towards the usual source of care have improved. Fewer Medicare beneficiaries are reporting that their doctor seems to be in a hurry, that their doctor does not discuss health problems, or that their doctor acts as if he/she is doing the respondent a favor. Improved attitudes may be a function of higher compensation for primary care services and/or the restructuring of reimbursement for evaluation and management services.

In addition to examining changes in utilization, access, and satisfaction for the Medicare population as a whole, time trends and MFS impacts for selected Medicare populations were also examined. For the most part, there were no differential *MFS impacts* by population characteristics. It does appear that black beneficiaries in 1992 and white beneficiaries in 1993 had a lower probability of barriers to care in fee increase areas (but they were slightly worse off in fee reduction areas). Whether these results persist in 1994 remains to be seen.

There were many more differential *time trend* results. Here the results may not be as encouraging. For instance, the likelihood of a physician visit increased for many of the relatively less vulnerable groups (e.g., those with above-average health and white Medicare beneficiaries) but did not change for the more vulnerable groups (e.g., the disabled with one or more ADLs and black Medicare beneficiaries). With regard to perceptions of barriers to care, black beneficiaries, the disabled, and those with no supplemental health coverage did not experience significant improvements over time. These results suggest that the utilization increases and reductions in barriers to care over time experienced by most of the Medicare population may not be shared by the more vulnerable groups--resulting in *relatively* worse access for the more vulnerable groups, all other things being equal.

The interpretation of these results is not straightforward. Even though potentially vulnerable groups are not *absolutely* worse off, they are *relatively* worse off than other Medicare beneficiaries. While widening differentials are not desirable between vulnerable and nonvulnerable populations, these results may raise the question of whether some Medicare beneficiaries have "too much" access. In any event, the access of vulnerable groups, vis-a-vis Medicare beneficiaries in general, should continue to be monitored.

Several caveats should be noted. First, this analysis is based on data for only 3 years--the year before, the first year of the MFS, and 1 year after implementation of the MFS. Physician payment changes may impact utilization differently over time, and the long-run impacts are unknown at this point. There may be other confounding factors in the short run which could not fully be captured. Second, the measure of expected Medicare payment change is exactly that--expected--and not actual. Moreover, the payment change areas are matched according to where Medicare beneficiaries live and do not necessarily coincide with where their providers practice. Measurement error on this key variable may result in measurement error in the regression analysis. Third, the model uses the beneficiary as the unit of analysis, while areas are used to measure payment changes. As such, area-specific factors that account for utilization differences may confound the results. At the same time, individual-specific factors may dilute the effect of payment changes.

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TABLE VIII-1

CHARACTERISTICS OF THE NONINSTITUTIONALIZED MEDICARE POPULATION: 1993*

	All Medicare Beneficiaries (n=7,651)	Disabled (Under Age 65) (n=1,314)	Elderly (Age 65 and Over) (n=6,337)
Age			
Under age 45	2.8 %	33.5 %	–
Ages 45-64	5.5	66.5	–
Ages 65-69	15.7	–	17.1 %
Ages 70-74	30.3	–	33.0
Ages 75-79	22.1	–	24.1
Ages 80-84	14.5	–	15.9
Age 85 and over	9.1	–	10.0
Sex			
Male	42.2	62.2	40.4
Female	57.8	37.8	59.6
Race/Ethnicity			
White	85.1	72.7	86.3
Black	9.0	18.7	8.1
Hispanic	4.1	6.5	3.9
Other	1.8	2.1	1.8
Educational Attainment			
1-6 years	11.4	16.3	11.0
7-11 years	30.8	32.0	30.6
12 years	31.7	34.9	31.5
more than 12 years	26.1	16.8	26.9
Living Arrangement			
Living with spouse	55.3	41.9	56.5
Living with others	18.8	42.3	16.6
Living alone	26.0	15.9	26.9
Living Children			
One or more	86.2	64.7	88.1
None	13.9	35.3	11.9
Income Status			
$10,000 or less	45.5	63.5	43.9
$10,001 to $20,000	31.0	22.0	31.8
$20,001 to $35,000	15.2	10.9	15.6
$35,000 or more	8.3	3.7	8.8
Insurance Coverage			
Medicare only	8.5	23.7	7.1
Medicare and Medicaid	8.3	28.7	6.4
Medicare and Private Coverage	72.9	32.6	76.5
Medicare and Other Coverage	10.4	15.0	9.9

TABLE VIII-1 (continued)

CHARACTERISTICS OF THE NONINSTITUTIONALIZED MEDICARE POPULATION: 1993*

	All Medicare Beneficiaries (n=7,651)	Disabled (Under Age 65) (n=1,314)	Elderly (Age 65 and Over) (n=6,337)
Medicare Fee Schedule Payment Change, 1996			
More than 10 percent reduction	19.7 %	15.2 %	20.1 %
5.01 to 10 percent reduction	28.1	28.2	28.1
2.01 to 5 percent reduction	11.8	11.1	11.8
2% reduction to 2% increase	9.2	8.0	9.4
2.01 to 5 percent increase	12.6	14.2	12.4
5.01 to 10 percent increase	9.7	11.0	9.6
Greater than 10 percent increase	8.9	12.3	8.6
Perceived Health Status			
Excellent	17.2	7.1	18.1
Very Good	26.2	12.4	27.4
Good	31.0	26.7	31.4
Fair	18.5	30.5	17.4
Poor	7.2	23.2	5.7
Level of Dependency			
None	62.7	33.6	65.4
IADLS only	6.9	19.1	5.7
1-2 ADLs	20.4	28.1	19.7
3-4 ADLs	6.6	12.8	6.1
5-6 ADLs	3.4	6.3	3.1
Census Division			
New England	3.6	2.7	3.7
Middle Atlantic	17.9	16.3	18.0
East North Central	17.8	16.9	17.8
West North Central	6.6	6.0	6.7
South Atlantic	19.8	24.1	19.4
East South Central	5.9	9.4	5.6
West South Central	9.9	8.5	10.0
Mountain	5.9	5.8	5.9
Pacific	12.7	10.3	12.9
Urbanicity			
Urban	72.3	66.9	72.8
Rural	27.7	33.1	27.2

* Includes noninstitutionalized Medicare beneficiaries who participated in Rounds 1, 4 and 7 of the Medicare Current Beneficiary Survey and were alive as of January 1, 1995. The weighted population projection is 25.31 million Medicare beneficiaries, of which 2.44 million enrollees are under age 65 and 22.87 million enrollees are age 65 and over.

SOURCE: Medicare Current Beneficiary Survey, Round 7 Data, Primary analysis by the Center for Health Economics Research.

TABLE VIII-2

UTILIZATION, ACCESS, AND SATISFACTION INDICATORS: 1991-1993

	1991	1992	1993
Type of Regular Source			
Physician's office	66.4%	68.9% (b)	71.4% (c) (a)
Other place with regular physician	19.9%	17.1%	16.3% (a)
Other place with no regular physician	4.6%	4.1%	4.0%
None	9.1%	9.9%	8.4%
Physician Use			
Percent with:			
Physician visit (any setting)	86.1%	90.1% (b)	91.2% (c) (a)
Physician visit in non-hospital setting	83.2%	86.7% (b)	88.6% (c) (a)
Outpatient department visit	26.6%	36.2% (b)	35.5% (a)
Emergency room visit	17.3%	20.7% (b)	20.8% (a)
Average Number of Visits per User:			
Total	6.1	6.6 (b)	6.6 (a)
To primary care physician	4.6	4.7	4.7
To medical specialist	3.0	3.2	3.5 (c) (a)
To other specialist	3.2	3.2	3.2
To non-physician	2.1	2.1	2.0
Hospital Use			
Percent with hospitalization	13.7%	14.1%	16.4% (c) (a)
Percent with ACS condition	2.9%	3.2%	5.4% (c) (a)
Preventive Use			
Percent with flu shot in previous winter	40.4%	47.1% (b)	50.2% (c) (a)
Percent of women with mammogram in previous year	40.0%	34.3% (b)	34.2% (a)
Percent of women with Pap smear in previous year	49.3%	33.4% (b)	31.6% (a)
Barriers to Care			
Percent reporting a health problem and not receiving care	9.6%	7.5% (b)	6.7% (a)
Of those, percent reporting a financial barrier	50.6%	54.0%	45.2% (c)
Satisfaction with Care			
Percent satisfied with:			
Quality of medical care	94.6%	96.2% (b)	96.2% (a)
Availability of medical care	88.4%	93.5% (b)	94.3% (a)
Ease of getting to doctor	92.8%	93.9% (b)	94.2% (a)
Costs of medical care	71.0%	80.0% (b)	83.5% (c) (a)

(a) Significantly different between 1991 and 1993.
(b) Significantly different between 1991 and 1992.
(c) Significantly different between 1992 and 1993.

NOTE: Age-adjusted using the direct method of standardization.

SOURCES: Medicare Current Beneficiary Survey, Rounds 1,4 and 7 Data; Medicare NCH Claims for MCBS Population. Primary analysis by the Center for Health Economics Research.

TABLE VIII-3

UTILIZATION, ACCESS, AND SATISFACTION INDICATORS, BY AGE: 1991-1993

	Disabled (Under Age 65)			Elderly (Age 65 and Over)		
	1991	1992	1993	1991	1992	1993
Type of Regular Source						
Physician's office	57.0%	58.4% *	60.6% *	67.5%	69.9% (b)	72.4% (c) (a)
Other place with regular physician	24.4%	19.9%	19.3%	19.4%	16.9%	16.0% (a)
Other place with no regular physician	9.6%	9.3%	6.7% *	4.0%	3.6%	3.5%
None	9.1%	12.4%	11.3%	9.2%	9.6%	8.1%
Physician Use						
Percent with:						
Physician visit (any setting)	85.9%	89.1% (b)	88.2% *	86.1%	90.1% (b)	91.4% (c) (a)
Physician visit in non-hospital setting	81.0% *	82.0% *	81.9% *	83.5%	87.2% (b)	88.8% (c) (a)
Outpatient department visit	32.7% *	40.8% (b) *	36.5% (c) (a)	25.9%	36.8% (b)	35.9% (a)
Emergency room visit	27.8% *	33.1% (b) *	28.6% (c) *	16.1%	19.8% (b)	20.3% (a)
Average Number of Visits per User:						
Total	6.2	6.8	6.5	6.1	6.6 (b)	6.6 (a)
To primary care physician	4.7	4.6	4.6	4.6	4.7	4.7
To medical specialist	3.5 *	4.1 *	4.0	3.0	3.2	3.5 (a)
To other specialist	3.7 *	3.9 *	3.5 *	3.1	3.1	3.1
To non-physician	2.2	2.2	2.3	2.1	2.1	2.0
Hospital Use						
Percent with hospitalization	16.9% *	16.5% *	17.1%	13.4%	13.8%	16.4% (c) (a)
Percent with ACS condition	3.9% *	4.2% *	4.7%	2.8%	3.0%	5.6% (c) (a)
Preventive Use						
Percent with flu shot in previous winter	24.1% *	26.0% *	28.2% (a) *	42.2%	48.6% (b)	51.6% (c) (a)
Percent of women with mammogram in previous year	31.3% *	29.8% *	28.4% *	41.0%	35.1% (b)	34.5% (a)
Percent of women with Pap smear in previous year	53.7%	40.9% (b) *	39.4% (a) *	48.9%	33.9% (b)	31.4% (a)
Barriers to Care						
Percent reporting a health problem and not receiving care	22.6% *	19.9% *	17.1% (a) *	8.2%	7.0% (b)	6.3% (a)
Of those, percent reporting a financial barrier	67.7% *	66.5% *	71.4% *	48.7%	53.4%	44.2% (c)
Satisfaction with Care						
Percent satisfied with:						
Quality of medical care	88.9% *	92.2% (b) *	92.6% (a) *	95.2%	96.4% (b)	96.3% (a)
Availability of medical care	82.3% *	88.6% (b) *	88.5% (a) *	89.1%	93.4% (b)	94.8% (c) (a)
Ease of getting to doctor	84.1% *	88.7% (b) *	89.5% (a) *	93.7%	94.4%	94.6% (a)
Costs of medical care	61.6% *	69.9% (b) *	73.8% (c) (a) *	72.0%	80.8% (b)	83.8% (c) (a)

(*) Significantly different from those aged 65 and over ($p<0.05$).
(a) Significantly different between 1991 and 1993.
(b) Significantly different between 1991 and 1992.
(c) Significantly different between 1992 and 1993.

NOTE: Age-adjusted using the direct method of standardization.

SOURCE: Medicare Current Beneficiary Survey, Rounds 1,4 and 7 Data; Medicare NCH Claims for MCBS Population. Primary analysis by the Center for Health Economics Research.

TABLE VIII-4

UTILIZATION, ACCESS, AND SATISFACTION INDICATORS, BY EXPECTED LEVEL OF 1996 MEDICARE PAYMENT CHANGE 1991-1993

	MORE THAN 10 PERCENT REDUCTION			5.01 TO 10 PERCENT REDUCTION		
Type of Regular Source	1991	1992	1993	1991	1992	1993
Physician's office	64.2%	64.9%	70.3% (c) (a) *	66.8% *	66.7% *	70.9% (a) *
Other place with regular physician	20.9% *	18.2%	18.8% *	18.7% *	18.7% *	15.6% *
Other place with no regular physician	4.9%	5.0%	3.8%	5.1%	4.8%	5.5%
None	10.1%	11.9%	9.4%	10.4%	9.8%	8.0%
Physician Use						
Percent with:						
Physician visit (any setting)	88.9%	90.3% (b)	91.4% (a)	88.8%	90.1% (b)	91.8% (a)
Physician visit in non-hospital setting	83.1%	87.0% (b)	88.2% (a)	84.2%	86.0% *	88.7% (c) (a)
Outpatient department visit	25.8%	31.8% (b)	31.3% (a)	25.8%	30.9% (b)	35.1% (a)
Emergency room visit	15.9%	19.3% (b)	18.3%	17.1%	20.5% (b)	20.1% (a)
Average Number of Visits per User:						
Total	8.8 *	7.4 *	7.8 *	6.2	6.9 (b)	6.7
To primary care physician	5.0 *	5.2	5.3 *	4.6	4.7	4.6
To medical specialist	3.2	3.7 *	4.1 (a) *	3.3	3.8 *	3.8 *
To other specialist	3.4	3.3	3.2	3.3	3.3	3.3
To non-physician	2.8 *	2.2 (b)	2.0 (a)	2.4	2.4	2.3 *
Hospital Use						
Percent with hospitalization	11.3%	14.2% (b)	15.2% (a)	14.3%	15.1%	18.7% (c) (a) *
Percent with ACS condition	3.1%	3.0%	4.8%	3.4%	3.8%	6.0% (c) (a)
Preventive Use						
Percent with flu shot in previous winter	38.8% *	46.8% (b) *	48.3% (a) *	38.4% *	44.8% (b) *	48.4% (c) (a) *
Percent of women with mammogram in previous year	42.2%	37.4%	36.0% (a)	41.0%	35.8% (b)	35.3% (a)
Percent of women with Pap smear in previous year	54.2%	38.5% (b)	33.7% (a)	45.8%	32.5% (b)	30.5% (a)
Barriers to Care						
Percent reporting a health problem and not receiving care	9.8%	7.4% (b)	7.4% (a)	8.7%	7.2%	6.3% (a)
Of those, percent reporting a financial barrier	44.8%	55.2%	44.1%	56.9%	54.1%	48.4%
Satisfaction with Care						
Percent satisfied with:						
Quality of medical care	93.7%	96.1% (b)	96.0% (a)	94.5%	95.8%	95.9% (a)
Availability of medical care	85.7%	92.3% (b)	92.1% (a)	87.7%	94.8% (b)	94.5% (a)
Ease of getting to doctor	90.4% *	92.9% (b)	92.2% *	92.8% *	94.1%	94.1%
Costs of medical care	72.1%	82.9% (b)	84.1% (a)	89.5% *	79.9% (b)	82.9% (c) (a)

TABLE VIII-4 (continued)

UTILIZATION, ACCESS, AND SATISFACTION INDICATORS, BY EXPECTED LEVEL OF 1996 MEDICARE PAYMENT CHANGE 1991-1993

Type of Regular Source	2.01 TO 6 PERCENT REDUCTION 1991	1992	1993	PLUS OR MINUS 2 PERCENT CHANGE 1991	1992	1993
Physician's office	69.4% *	71.8% *	71.8% *	58.4%	62.4%	59.1%
Other place with regular physician	18.7% *	15.6%	16.3% *	29.2%	24.9%	28.1%
Other place with no regular physician	3.3%	3.3%	3.1%	5.6%	3.9%	3.3%
None	8.7%	9.3%	8.6%	6.6%	6.8%	9.5%
Physician Use						
Percent with:						
Physician visit (any setting)	85.5%	89.8% (b)	91.7% (a)	87.3%	90.6%	91.5% (a)
Physician visit in non-hospital setting	83.0%	86.3%	89.2% (a)	85.5%	89.2%	89.8% (a)
Outpatient department visit	23.1%	34.0% (b)	33.1% (a)	27.2%	33.0% (b)	35.3% (a)
Emergency room visit	19.4%	22.7%	22.4%	18.3%	21.2%	19.8%
Average Number of Visits per User:						
Total	6.0	6.4	6.4	5.9	6.2	6.3
To primary care physician	4.2	4.5	4.5	4.3	4.5	4.4
To medical specialist	3.2	3.0	3.1	2.6	2.6	2.7
To other specialist	3.2	3.2	3.0	3.3	3.2	3.5
To non-physician	1.4	2.0	1.5	2.0	2.0	1.7
Hospital Use						
Percent with hospitalization	16.6%	12.1% (b) *	18.6% (c)	14.4%	18.0%	13.1%
Percent with ACS condition	2.8%	2.8%	6.2% (c) (a)	2.7%	4.1%	3.9%
Preventive Use						
Percent with flu shot in previous winter	43.2%	48.7% (b)	53.0% (a)	43.7%	53.0% (b)	54.6% (a)
Percent of women with mammogram in previous year	34.0% *	29.6% *	30.0%	44.0%	37.3%	33.9% (a)
Percent of women with Pap smear in previous year	46.2%	30.6% (b)	29.9% (a)	51.9%	33.3% (b)	32.0% (a)
Barriers to Care						
Percent reporting a health problem and not receiving care	8.6%	8.6%	7.5%	8.9%	7.4%	6.7%
Of those, percent reporting a financial barrier	37.2%	41.8%	29.3%	51.1%	60.1%	40.7%
Satisfaction with Care						
Percent satisfied with:						
Quality of medical care	94.7%	96.2%	97.1% (a)	95.9%	97.4%	96.6%
Availability of medical care	89.7%	93.1%	94.6% (a)	89.9%	94.4% (b)	92.9%
Ease of getting to doctor	93.2%	95.2%	95.2%	95.1%	94.6%	95.1%
Costs of medical care	70.8% *	80.1% (b)	82.4% (a)	78.2%	81.6% (b)	86.0% (c) (a)

TABLE VIII-4 (continued)

UTILIZATION, ACCESS, AND SATISFACTION INDICATORS, BY EXPECTED LEVEL OF 1996 MEDICARE PAYMENT CHANGE: 1991-1993

Type of Regular Source	2.01 TO 5 PERCENT INCREASE			5.01 TO 10 PERCENT INCREASE		
	1991	1992	1993	1991	1992	1993
Physician's office	74.2% *	79.1% (b) *	78.8% (a) *	59.2%	57.4%	70.1% (c) (a) *
Other place with regular physician	14.9% *	8.7% *	9.7% *	28.0%	27.5%	19.1%
Other place with no regular physician	3.7%	3.5%	3.7%	4.2%	3.3%	2.5%
None	7.3%	8.7%	7.8%	10.7%	11.6%	8.3%
Physician Use						
Percent with:						
Physician visit (any setting)	85.5%	91.6% (b)	91.8% (a)	84.0%	88.6% (b)	89.6% (a)
Physician visit in non-hospital setting	82.1%	89.0% (b)	89.5% (a)	80.9% *	84.1% *	87.2% (a)
Outpatient department visit	29.2%	40.8% (b) *	40.1% (a)	27.8%	36.0% (b)	37.6% (a)
Emergency room visit	17.1%	21.3% (b)	23.4% (a)	15.9%	22.1% (b)	25.4% (a) *
Average Number of Visits per User:						
Total	8.1	8.5	8.5	5.5	8.1	6.1
To primary care physician	4.9 *	5.0	4.7	4.1	4.3	4.3
To medical specialist	2.5	2.7	3.4 (c) (a)	3.0	2.8	3.3
To other specialist	2.9	3.1	3.0	2.9	2.9	3.2
To non-physician	1.8	1.4 *	2.5	1.8	2.7	1.8
Hospital Use						
Percent with hospitalization	13.4%	14.8%	18.5%	12.8%	13.0%	17.1% (c) (a) *
Percent with ACS condition	3.0%	4.5%	5.4% (a)	1.5%	2.3%	6.7% (c) (a) *
Preventive Use						
Percent with flu shot in previous winter	39.5%	45.5% (b) *	49.1% (a) *	43.6%	51.9% (b)	55.9% (a)
Percent of women with mammogram in previous year	41.9%	31.7% (b)	33.0% (a)	37.2%	30.9%	36.7%
Percent of women with Pap smear in previous year	51.5%	38.6% (b)	34.4% (a)	46.7%	28.4% (b)	31.0% (a)
Barriers to Care						
Percent reporting a health problem and not receiving care	10.9%	8.2% (b)	7.2% (a)	10.9%	11.0% *	6.6% (c) (a)
Of those, percent reporting a financial barrier	53.3%	47.0%	54.4%	59.5%	85.9%	48.4% (c)
Satisfaction with Care						
Percent satisfied with:						
Quality of medical care	95.3%	98.3%	95.9%	94.5%	95.9%	96.9% (a)
Availability of medical care	89.8%	91.6%	93.3% (a)	89.3%	91.7%	95.5% (c) (a)
Ease of getting to doctor	92.6%	93.2%	94.5%	93.2%	93.6%	94.7%
Costs of medical care	70.2% *	78.6% (b)	81.6% (a) *	89.9% *	73.6% *	83.2% (c) (a)

TABLE VIII-4 (continued)

UTILIZATION, ACCESS, AND SATISFACTION INDICATORS, BY EXPECTED LEVEL OF 1996 MEDICARE PAYMENT CHANGE 1991-1993

	MORE THAN 10 PERCENT INCREASE		
	1991	1992	1993
Type of Regular Source			
Physician's office	74.8% *	78.9% *	78.5% *
Other place with regular physician	13.7% *	10.7% *	10.9% *
Other place with no regular physician	4.5%	3.4%	3.7%
None	7.0%	7.0%	6.9%
Physician Use			
Percent with:			
Physician visit (any setting)	84.9%	89.4% (b)	86.8% (a)
Physician visit in non-hospital setting	82.4%	86.5% (b)	87.1% (a)
Outpatient department visit	29.8%	42.3% (b) *	41.8% (a) *
Emergency room visit	18.8%	19.9%	20.0%
Average Number of Visits per User:			
Total	5.6	5.8	5.6 *
To primary care physician	4.3	4.4	4.3
To medical specialist	2.2	2.8 (b)	2.7 (a)
To other specialist	3.0	2.8	2.7 *
To non-physician	1.6	1.9	1.7
Hospital Use			
Percent with hospitalization	14.3%	12.1% *	15.2%
Percent with ACS condition	3.2%	2.1% *	4.7% (c)
Preventive Use			
Percent with flu shot in previous winter	41.0%	43.9% *	46.9% (a) *
Percent of women with mammogram in previous year	35.9% *	32.5%	30.9%
Percent of women with Pap smear in previous year	51.5%	34.8% (b)	29.1% (a)
Barriers to Care			
Percent reporting a health problem and not receiving care	10.8%	5.8% (b)	5.5% (a)
Of those, percent reporting a financial barrier	52.0%	64.2%	48.9%
Satisfaction with Care			
Percent satisfied with:			
Quality of medical care	94.9%	96.8%	95.4%
Availability of medical care	91.5%	97.2% (b)	97.3% (a) *
Ease of getting to doctor	94.8%	94.3%	95.4%
Costs of medical care	70.7% *	80.4% (b)	85.9% (c) (a)

(*) Significantly different from those in areas with plus or minus 2 percent change in Medicare fees ($p<0.05$).

(a) Significantly different between 1991 and 1993.
(b) Significantly different between 1991 and 1992.
(c) Significantly different between 1992 and 1993.

NOTE: Age-adjusted using the direct method of standardization.

SOURCES: Medicare Current Beneficiary Survey, Rounds 1, 4 and 7 Data; Medicare NCH Claims for MCBS Population. Primary analysis by the Center for Health Economics Research.

TABLE VIII-5

ATTITUDES TOWARD THE USUAL SOURCE OF CARE, BY EXPECTED LEVEL OF 1996 MEDICARE FEE SCHEDULE CHANGES: 1991 - 1993

		All Medicare Beneficiaries	More than 10 Percent Reduction	5.01 to 10 Percent Reduction	2.01 to 5 Percent Reduction	Plus or Minus 2 Percent Change	2.01 to 5 Percent Increase	5.01 to 10 Percent Increase	More than 10 Percent Increase
Doctor is Competent and Well-Trained	1991	98.6%	98.2%	98.6%	99.2%	99.2%	98.9%	98.1%	98.4%
	1992	98.7%	98.5%	98.9%	98.4%	98.7%	98.6%	98.6%	99.2%
	1993	98.7%	98.6%	98.5%	98.5%	98.3%	99.2%	98.6%	99.5%
Doctor Answers All Questions	1991	96.0%	95.1%	96.5%	96.1%	96.2%	96.7%	94.7%	96.7%
	1992	95.7%	95.3%	95.2%	96.2%	96.6%	96.6%	93.2% *	97.1%
	1993	95.7%	95.4%	95.4%	95.8%	94.2%	97.5%	95.5% *	96.5%
Doctor Has Good Understanding of Medical History	1991	95.2%	93.3%	96.5%	95.9%	95.6%	94.6%	94.2%	95.7%
	1992	96.0% (b)	94.6%	96.6%	95.9%	96.6%	95.7%	95.6%	96.7%
	1993	96.3% (a)	95.8% (a)	96.5%	96.3%	96.1%	97.4% (a)	94.6%	97.1%
Respondent has Great Confidence in Doctor	1991	94.2%	93.3%	94.4%	94.6%	94.6%	94.7%	93.7%	95.1%
	1992	94.2%	95.0%	94.7%	94.4%	94.0%	93.6%	92.3%	93.6%
	1993	94.0%	93.9%	93.3%	93.3%	92.8%	95.0%	94.2%	96.3% (c) *
Doctor Understands Things That are Wrong	1991	93.1%	91.3% *	94.3%	93.6%	94.5%	93.4%	90.3% *	93.8%
	1992	94.2% (b)	93.6% (b)	94.6%	94.7%	93.9%	93.7%	92.4%	94.5%
	1993	94.3% (a)	94.2% (a)	94.3%	93.6%	92.8%	95.1%	93.3%	95.9% *
Doctor Checks Everything When Examining	1991	92.6%	92.3%	93.6%	93.7%	92.6%	93.0%	91.7%	91.9%
	1992	93.5%	94.6% (b)	95.3% (b)	91.5%	93.4%	91.5%	92.2%	91.7%
	1993	93.1%	93.1%	93.6% (c)	92.5%	92.8%	92.7%	92.9%	93.2%
Doctor Tells All that Respondent Wants to Know	1991	91.2%	90.4%	92.3%	91.6%	91.4%	91.3%	89.4%	90.1%
	1992	90.9%	90.8%	91.9%	90.7%	91.2%	91.7%	90.4%	87.8%
	1993	91.9% (c)	91.5%	91.5%	90.9%	90.6%	92.2%	92.9% (a)	94.5% (c) (a) *

TABLE VIII-5 (continued)

ATTITUDES TOWARD THE USUAL SOURCE OF CARE, BY EXPECTED LEVEL OF 1996 MEDICARE FEE SCHEDULE CHANGES: 1991 - 1993

		All Medicare Beneficiaries	More than 10 Percent Reduction	5.01 to 10 Percent Reduction	2.01 to 5 Percent Reduction	Plus or Minus 2 Percent Change	2.01 to 5 Percent Increase	5.01 to 10 Percent Increase	More than 10 Percent Increase
Respondent Depends on Doctor To Feel Better	1991	85.6%	84.0%	85.9%	84.9%	85.9%	84.4%	85.8%	90.7% *
	1992	84.0% (b)	78.7% (b) *	83.2% (b) *	84.6%	87.9%	85.0%	83.3% *	91.3%
	1993	84.9%	78.8% (a) *	84.0%	84.6%	86.4%	88.0% (a)	89.1% (c)	90.4% *
Doctor Seems to be in a Hurry	1991	18.3%	20.2%	* 16.0%	20.5%	* 18.2%	14.8%	20.7%	* 22.9% *
	1992	15.9% (b)	17.3%	12.8%	(b) * 15.2% (b)	17.7%	18.6%	18.2%	19.6%
	1993	15.6% (a)	15.5% (a)	12.9%	(a) * 17.4%	17.0%	14.8%	21.1%	17.0% (a)
Doctor Does Not Explain Medical Problems	1991	15.6%	18.2%	14.4%	17.4%	14.8%	15.5%	14.1%	18.1%
	1992	14.0% (b)	14.7%	13.6%	12.5% (b)	13.5%	13.8%	15.9%	14.1%
	1993	12.0% (c) (a)	11.4% (c) (a)	11.8% (a)	12.4% (a)	13.9%	13.3%	11.3% (c)	10.9% (a)
Doctor Does Not Discuss Health Problems	1991	12.7%	15.0%	* 11.7%	12.5%	10.8%	11.8%	14.8%	* 11.2%
	1992	10.7% (b)	11.2% (b)	10.6%	11.5%	9.8%	9.5%	12.3%	10.1%
	1993	10.3% (a)	9.9% (a)	9.3%	(a) * 10.7%	12.8%	9.5%	13.0%	10.0%
Doctor Acts as if Doing a Favor	1991	6.2%	9.8%	* 7.0%	7.9%	8.0%	7.1%	10.3%	* 11.1% *
	1992	6.8% (b)	7.2% (b)	5.5%	7.4%	4.8%	8.2%	* 7.9%	* 8.4% *
	1993	6.3% (a)	8.2% (a)	4.8%	(a) * 8.5%	7.7% (c)	5.5% (c)	8.9%	8.1%

(*) Significantly different from those in areas with plus or minus 2 percent change in expected Medicare fees ($p<0.05$).

(a) Significantly different between 1991 and 1993.
(b) Significantly different between 1991 and 1992.
(c) Significantly different between 1992 and 1993.

SOURCE: Medicare Current Beneficiary Survey, Rounds 1, 4 and 7 Data, Primary analysis by the Center for Health Economics Research.

TABLE VIII-6

UTILIZATION, ACCESS, AND SATISFACTION INDICATORS, BY SELF- REPORTED HEALTH STATUS: 1991-1993

	EXCELLENT HEALTH			VERY GOOD HEALTH		
Type of Regular Source	1991	1992	1993	1991	1992	1993
Physician's office	63.0%	64.8%	65.1%	65.8%	66.4%	69.9% (a) *
Other place with regular physician	16.7%	16.8%	16.8%	20.2%	17.0%	17.1%
Other place with no regular physician	4.5%	3.6%	4.7%	4.2%	3.7%	3.9%
None	13.8%	15.0%	13.4%	9.8%	10.9%	9.1%
Physician Use						
Percent with:						
Physician visit (any setting)	76.5%	81.4% (b)	82.8% (a)	82.7% *	87.3% (b) *	89.0% (a) *
Physician visit in non-hospital setting	74.0%	78.1% (b)	80.7% (a)	79.9% *	84.0% (b) *	86.3% (c) (a) *
Outpatient department visit	19.1%	28.5% (b)	25.5% (a)	23.4% *	32.4% (b) *	31.7% (a) *
Emergency room visit	9.8%	10.7%	12.6% (a)	13.7% *	16.9% (b) *	14.9%
Average Number of Visits per User:						
Total	4.4	4.8	4.9 (a)	5.2 *	5.7 (b) *	5.4 *
To primary care physician	3.3	3.4	3.6	3.9 *	4.0 *	3.8
To medical specialist	2.6	2.7	2.9	2.6	3.0	3.2
To other specialist	2.8	2.9	2.6	2.8	2.9	2.9
To non-physician	2.1	1.7	1.4 (a)	2.0	2.3 *	1.9 *
Hospital Use						
Percent with hospitalization	7.3%	7.5%	7.9%	9.7% *	9.8%	10.3% *
Percent with ACS condition	0.7%	1.3%	2.3% (a)	1.5%	2.1%	2.1%
Preventive Use						
Percent with flu shot in previous winter	36.8%	43.8% (b)	46.3% (a)	40.2% *	47.8% (b) *	51.1% (c) (a) *
Percent of women with mammogram in previous year	41.2%	32.7% (b)	34.2% (a)	44.9%	36.7% (b)	35.4% (a)
Percent of women with Pap smear in previous year	50.5%	31.5% (b)	30.2% (a)	52.3%	34.5% (b)	34.7% (a)
Barriers to Care						
Percent reporting a health problem and not receiving care	3.7%	3.0%	2.9%	5.7% *	3.9% (b)	4.2% (a)
Of those, percent reporting a financial barrier	62.8%	59.0%	31.4% (c) (a)	39.1% *	49.2%	35.8%
Satisfaction with Care						
Percent satisfied with:						
Quality of medical care	97.5%	97.8%	97.5%	95.9% *	96.1% (b)	97.7% (a)
Availability of medical care	91.8%	98.0% (b)	94.7%	88.7%	94.1% (b)	95.1% (a)
Ease of getting to doctor	95.8%	98.4%	98.5%	95.0%	98.0%	95.9%
Costs of medical care	80.7%	87.9% (b)	88.0% (a)	76.4% *	85.0% (b) *	87.1% (a)

TABLE VIII-6 (continued)

UTILIZATION, ACCESS, AND SATISFACTION INDICATORS, BY SELF- REPORTED HEALTH STATUS: 1991-1993

	GOOD HEALTH			FAIR HEALTH		
Type of Regular Source	1991	1992	1993	1991	1992	1993
Physician's office	68.3% *	69.8% *	74.5% (c) (a) *	66.1% *	71.7% *	73.9% (a) *
Other place with regular physician	19.8%	17.7%	15.2%	19.9%	16.8%	16.3%
Other place with no regular physician	4.0%	4.2%	3.2%	5.4%	4.5%	4.5%
None	8.1%	8.3%	7.1%	8.7%	7.0%	5.3%
Physician Use						
Percent with:						
Physician visit (any setting)	86.3% *	93.0% (b) *	93.2% (a) *	90.8% *	95.2% (b) *	96.2% (a) *
Physician visit in non-hospital setting	85.8% *	90.3% (b) *	91.2% (a) *	87.5% *	91.5% (b) *	93.5% (c) (a) *
Outpatient department visit	27.2% *	36.7% (b) *	36.3% (a) *	31.8% *	44.0% (b) *	44.5% (a) *
Emergency room visit	16.9% *	20.4% (b) *	20.2% (a) *	23.3% *	29.5% (b) *	30.2% (a) *
Average Number of Visits per User:						
Total	8.3 *	8.7 *	8.8 (a) *	7.5 *	8.3 (b) *	8.2 (a) *
To primary care physician	4.6 *	4.7 *	4.8 *	5.6 *	5.9 *	5.7 *
To medical specialist	2.9	3.2 *	3.3 (a)	3.5 *	4.1 (b) *	4.2 (a) *
To other specialist	3.3 *	3.2	3.3 *	3.5 *	3.5 *	3.5 *
To non-physician	2.0	1.9	2.2 *	2.2	2.7 *	2.0 *
Hospital Use						
Percent with hospitalization	13.6% *	15.1% *	16.8% (a) *	18.7% *	19.3% *	24.5% (c) (a) *
Percent with ACS condition	2.3% *	2.8% *	5.8% (c) (a) *	4.5% *	5.5% *	8.7% (c) (a) *
Preventive Use						
Percent with flu shot in previous winter	41.5% *	46.5% (b)	49.7% (c) (a)	39.8%	46.0% (b) *	51.5% (a) *
Percent of women with mammogram in previous year	35.5% *	33.1%	33.4%	39.2%	34.3% (b)	35.4%
Percent of women with Pap smear in previous year	46.3%	35.1% (b)	32.0% (a)	49.2%	31.9% (b)	29.4% (a)
Barriers to Care						
Percent reporting a health problem and not receiving care	8.8% *	6.7% (b) *	4.7% (c) (a) *	15.1% *	13.5% *	10.7% (c) (a) *
Of those, percent reporting a financial barrier	47.2%	51.1%	36.3% (c)	51.9%	46.4%	59.0% (c) *
Satisfaction with Care						
Percent satisfied with:						
Quality of medical care	96.1% *	96.5% *	97.1%	92.9% *	94.0% *	93.5% *
Availability of medical care	89.6%	93.8% (b)	94.9% (a)	86.4%	93.4% (b)	93.0% (a)
Ease of getting to doctor	93.8% *	93.6% *	95.1%	89.6% *	91.1% *	91.2% *
Costs of medical care	70.6% *	79.2% (b) *	84.4% (c) (a) *	64.4% *	73.2% (b) *	77.2% (c) (a) *

TABLE VIII-6 (continued)

UTILIZATION, ACCESS, AND SATISFACTION INDICATORS, BY SELF- REPORTED HEALTH STATUS: 1991-1993

	POOR HEALTH		
	1991	1992	1993
Type of Regular Source			
Physician's office	65.8%	70.2% *	72.0% (a) *
Other place with regular physician	22.4%	16.8%	16.9%
Other place with no regular physician	5.7%	6.5%	4.2%
None	6.1%	6.5%	6.9%
Physician Use			
Percent with:			
Physician visit (any setting)	94.0% *	93.9% *	95.3% *
Physician visit in non-hospital setting	90.2% *	86.9% *	89.3% *
Outpatient department visit	38.2% *	47.2% (b) *	48.5% (a) *
Emergency room visit	33.0% *	41.6% (b) *	42.6% (a) *
Average Number of Visits per User:			
Total	8.9 *	9.7 *	8.9 *
To primary care physician	6.5 *	6.6 *	6.3 *
To medical specialist	4.1 *	3.7 *	4.5 *
To other specialist	4.1 *	3.8 *	3.3 (a) *
To non-physician	3.0	2.6 *	2.9 *
Hospital Use			
Percent with hospitalization	29.8% *	33.2% *	39.0% (c) (a) *
Percent with ACS condition	11.1% *	8.7% *	16.3% (c) (a) *
Preventive Use			
Percent with flu shot in previous winter	40.9%	48.6% (b) *	50.9% (a)
Percent of women with mammogram in previous year	35.9%	26.1% (b) *	29.2%
Percent of women with Pap smear in previous year	39.3% *	26.5% (b)	25.6% (a)
Barriers to Care			
Percent reporting a health problem and not receiving care	23.4% *	19.4% *	19.2% *
Of those, percent reporting a financial barrier	60.6%	66.7%	51.4% (c) *
Satisfaction with Care			
Percent satisfied with:			
Quality of medical care	84.2% *	86.1% (b) *	91.3% (a) *
Availability of medical care	84.4% *	86.1% *	94.0% (c) (a)
Ease of getting to doctor	84.0% *	86.6% *	86.6% *
Costs of medical care	51.4% *	84.5% (b) *	73.9% (c) (a) *

(*) Significantly different from those with excellent health ($p<0.05$).

(a) Significantly different between 1991 and 1993.
(b) Significantly different between 1991 and 1992.
(c) Significantly different between 1992 and 1993.

NOTE: Age-adjusted using the direct method of standardization.

SOURCES: Medicare Current Beneficiary Survey, Rounds 1, 4 and 7 Data, Medicare NCH Claims for MCBS Population. Primary analysis by the Center for Health Economics Research

TABLE VIII-7

UTILIZATION, ACCESS, AND SATISFACTION INDICATORS, BY INCOME: 1991-1993

	$10,000 OR LESS			$10,001 TO $20,000		
Type of Regular Source	1991	1992	1993	1991	1992	1993
Physician's office	63.7%	67.9% (b)	70.7% (c) (a)	66.2%	69.1%	71.9% (a)
Other place with regular physician	18.7%	16.4%	15.3%	21.6%	17.5%	16.8%
Other place with no regular physician	6.5%	5.1%	5.2%	4.0%	3.3%	2.6%
None	11.1%	10.6%	8.8%	8.2%	10.1%	8.8%
Physician Use						
Percent with:						
Physician visit (any setting)	82.9%	88.2% (b)	90.0% (c) (a)	85.8%	90.8% (b)	91.2% (a)
Physician visit in non-hospital setting	79.5%	84.2% (b)	86.8% (c) (a)	82.7%	87.6% (b)	88.8% (a)
Outpatient department visit	25.0%	33.5% (b)	34.0% (a)	28.4%	37.7% (b)	37.1% (a)
Emergency room visit	20.7%	22.3%	22.5%	17.1%	20.7% (b)	20.7% (a)
Average Number of Visits per User:						
Total	6.6	6.8	6.7	6.1	6.6 (b)	6.6 (a)
To primary care physician	5.2	5.0	4.9	4.7	4.6	4.6
To medical specialist	3.4	3.3	3.5	3.0	3.2	3.5 (a)
To other specialist	3.3	3.2	3.1	3.3	3.2	3.1
To non-physician	2.0	2.1	2.2	2.1	2.0	1.8
Hospital Use						
Percent with hospitalization	14.3%	14.6%	17.1% (c) (a)	14.5%	14.7%	16.8%
Percent with ACS condition	3.6%	3.5%	6.4% (c) (a)	3.0%	3.3%	5.1% (c) (a)
Preventive Use						
Percent with flu shot in previous winter	31.6%	41.7% (b)	44.0% (c) (a)	41.3%	46.7% (b)	50.7% (c) (a)
Percent of women with mammogram in previous year	31.6%	30.9%	29.7%	40.6%	34.4% (b)	35.0% (a)
Percent of women with Pap smear in previous year	40.1%	30.4% (b)	27.0% (c) (a)	52.2%	33.4% (b)	32.8% (a)
Barriers to Care						
Percent reporting a health problem and not receiving care	15.3%	9.1% (b)	8.1% (a)	10.0%	7.1% (b)	7.1% (a)
Of those, percent reporting a financial barrier	57.8%	60.6%	51.9% (c)	48.6%	52.3%	39.2% (c)
Satisfaction with Care						
Percent satisfied with:						
Quality of medical care	92.8%	95.2% (b)	95.6% (a)	94.7%	96.6% (b)	96.7% (a)
Availability of medical care	89.0%	93.7% (b)	94.2% (a)	88.5%	93.3% (b)	94.5% (a)
Ease of getting to doctor	88.7%	93.0% (b)	92.8% (a)	93.1%	93.7%	94.5%
Costs of medical care	66.6%	78.3% (b)	82.0% (c) (a)	68.6%	79.6% (b)	82.3% (c) (a)

TABLE VIII-7 (continued)

UTILIZATION, ACCESS, AND SATISFACTION INDICATORS, BY INCOME: 1991-1993

	$20,001 TO $35,000				MORE THAN $35,000			
	1991	1992	1993		1991	1992	1993	
Type of Regular Source								
Physician's office	67.7%	68.9%	70.6%		70.7%	73.7%	73.7% *	
Other place with regular physician	20.6%	19.4%	18.9%		17.8%	15.4%	15.6%	
Other place with no regular physician	3.5%	3.5%	3.5%		4.3%	3.3%	3.5%	
None	8.1%	8.2%	7.1%		7.2%	7.6%	7.3%	
Physician Use								
Percent with:								
Physician visit (any setting)	89.1%	92.5% (b)	93.4%	(a)	88.4%	95.0% (b)	94.7%	(a)
Physician visit in non-hospital setting	86.4%	90.0% (b)	91.6%	(a)	86.0%	91.7% (b)	93.3%	(a)
Outpatient department visit	27.9%	39.3% (b)	36.9%	(a)	27.9%	40.7% (b)	38.3%	(a)
Emergency room visit	16.2%	20.2% (b)	19.4%	(a)	14.8%	16.5%	18.2%	
Average Number of Visits per User:								
Total	5.9	6.5	6.5		5.4	6.0	6.7	(a)
To primary care physician	4.4 *	4.6 *	4.5		3.4	3.7	4.0	
To medical specialist	2.9	3.1	3.4		3.0	3.1	3.4	
To other specialist	2.8	2.9	3.1		3.1	3.2	3.5	
To non-physician	2.1	2.4	2.0		2.2	2.0	1.7	
Hospital Use								
Percent with hospitalization	13.3%	11.9%	15.0%		12.4%	13.4%	13.6%	
Percent with ACS condition	2.1%	2.9%	4.9% (c)	(a)	2.3%	2.2%	3.2%	
Preventive Use								
Percent with flu shot in previous winter	45.9% *	55.7% (b)	59.5%	(a)	50.7%	60.6% (b)	62.7%	(a)
Percent of women with mammogram in previous year	46.5% *	42.5%	44.5%		54.5%	46.6%	48.1%	
Percent of women with Pap smear in previous year	57.3%	39.6% (b)	37.8%	(a)	59.5%	47.8% (b)	46.8%	(a)
Barriers to Care								
Percent reporting a health problem and not receiving care	6.8% *	5.9%	4.0%	(a)	4.4%	5.9%	3.5%	
Of those, percent reporting a financial barrier	34.4%	36.8%	31.9%		25.5%	30.4%	21.3%	
Satisfaction with Care								
Percent satisfied with:								
Quality of medical care	96.0%	96.3%	96.1%		96.8%	98.2%	97.3%	
Availability of medical care	90.1%	93.0%	93.7%	(a)	87.0%	94.2% (b)	95.0%	(a)
Ease of getting to doctor	95.9%	95.2%	95.9%		95.1%	96.6%	97.1%	
Costs of medical care	75.1%	82.1% (b)	86.6% (c)	(a)	77.5%	85.1% (b)	88.0%	(a)

(*) Significantly different from those with incomes over $35,000 (p<0.05).

(a) Significantly different between 1991 and 1993.
(b) Significantly different between 1991 and 1992.
(c) Significantly different between 1992 and 1993.

NOTE: Age-adjusted using the direct method of standardization.

SOURCES: Medicare Current Beneficiary Survey, Rounds 1, 4 and 7 Data, Medicare NCH Claims for MCBS Population. Primary analysis by the Center for Health Economics Research.

TABLE VIII-6

UTILIZATION, ACCESS, AND SATISFACTION INDICATORS, BY SUPPLEMENTAL COVERAGE: 1991 - 1993

	MEDICARE ONLY			MEDICARE AND MEDICAID ONLY		
Type of Regular Source	1991	1992	1993	1991	1992	1993
Physician's office	49.4%	49.4%	53.9%	62.5%	67.5%	71.1% (a)
Other place with regular physician	19.6%	15.5%	16.6%	20.0%	18.1%	14.2%
Other place with no regular physician	11.0%	12.0%	11.1%	8.3%	5.7%	5.9%
None	20.0%	23.1%	18.5%	9.2%	10.6%	8.8%
Physician Use						
Percent with:						
Physician visit (any setting)	74.2%	76.4%	79.2% (a)	87.7%	91.5% (b)	91.8% (a)
Physician visit in non-hospital setting	66.0%	68.7%	69.6%	83.8%	86.2%	87.4% (a)
Outpatient department visit	26.1%	31.6% (b)	34.0% (a)	24.6%	34.0% (b)	36.8% (a)
Emergency room visit	17.7%	19.8%	22.1% (a)	24.6%	34.3% (b)	29.2% (c) (a)
Average Number of Visits per User:						
Total	5.1	5.8	5.1	8.1	8.8	7.9
To primary care physician	4.4	4.6	4.2	5.2	5.6	6.0
To medical specialist	2.9	3.0	3.4	4.0	4.1	3.8
To other specialist	2.8	3.0	2.8	4.2	3.7	3.3 (a)
To non-physician	2.4	1.5 (b)	1.4 (a)	1.8	2.2	2.0
Hospital Use						
Percent with hospitalization	10.8%	12.3%	12.1%	20.5%	21.4%	21.5%
Percent with ACS condition	2.7%	4.0%	2.9%	5.5%	5.2%	8.4% (c) (a)
Preventive Use						
Percent with flu shot in previous winter	25.0%	30.0% (b)	31.0% (a)	29.0%	34.4% (b)	38.0% (a)
Percent of women with mammogram in previous year	22.6%	19.5%	19.6%	32.2%	23.6% (b)	27.6%
Percent of women with Pap smear in previous year	30.0%	14.8% (b)	17.4% (a)	36.7%	23.1% (b)	19.8% (a)
Barriers to Care						
Percent reporting a health problem and not receiving care	14.1%	13.7%	11.5%	16.6%	10.2% (b)	11.2% (a)
Of those, percent reporting a financial barrier	64.4%	82.2% (b)	66.5% (c)	51.8%	58.3%	34.7% (c) (a)
Satisfaction with Care						
Percent satisfied with:						
Quality of medical care	93.5%	93.3%	94.4%	93.9%	94.8%	94.6%
Availability of medical care	87.7%	94.7% (b)	93.6% (a)	90.9%	92.9%	92.9%
Ease of getting to doctor	90.4%	90.3%	92.3%	84.6%	86.5% (b)	89.3% (a)
Costs of medical care	63.2%	69.4% (b)	71.2% (a)	79.4%	86.7% (b)	91.9% (c) (a)

TABLE VIII-8 (continued)

UTILIZATION, ACCESS, AND SATISFACTION INDICATORS, BY SUPPLEMENTAL COVERAGE: 1991 - 1993

	MEDICARE AND PRIVATE ONLY			MEDICARE AND OTHER			
	1991	1992	1993	1991	1992	1993	
Type of Regular Source							
Physician's office	69.9%	71.7%	73.9% (c) (a)	65.3%	67.9%	68.4%	*
Other place with regular physician	19.6%	17.1%	16.1%	23.9%	20.0%	16.2%	
Other place with no regular physician	3.0%	2.7%	2.6%	4.9%	5.7%	6.5%	
None	7.5%	6.4%	7.4%	6.0%	6.4%	6.9%	
Physician Use							
Percent with:							
Physician visit (any setting)	87.5%	91.5% (b)	92.1% (a)	90.5%	93.0%	94.0%	(a)
Physician visit in non-hospital setting	85.4%	89.2% (b)	90.7% (c) (a)	88.4%	87.6%	89.9%	
Outpatient department visit	28.6%	37.0% (b)	34.9% (c) (a)	30.5%	38.4% (b)	39.6%	(a) *
Emergency room visit	16.0%	18.6% (b)	19.0% (a)	25.0% *	30.5% *	26.8%	*
Average Number of Visits per User:							
Total	6.0	6.4 (b)	6.5 (a)	7.6 *	7.5 *	7.4	*
To primary care physician	4.4	4.4	4.4	5.7 *	5.5 *	5.5	*
To medical specialist	2.9	3.1	3.5 (c) (a)	3.0	3.4	3.5	
To other specialist	3.0	3.1	3.1	4.0 *	3.6 *	3.3	
To non-physician	2.3	2.2	2.0	1.5 *	1.9	2.1	(a)
Hospital Use							
Percent with hospitalization	13.1%	13.3%	15.6% (c) (a)	20.5% *	15.6%	20.8% (c)	*
Percent with ACS condition	2.5%	2.9%	5.0% (c) (a)	6.1% *	3.9%	7.9% (c)	*
Preventive Use							
Percent with flu shot in previous winter	43.5%	50.0% (b)	52.9% (c) (a)	40.3%	47.6% (b)	51.3%	(a)
Percent of women with mammogram in previous year	43.2%	37.5% (b)	35.6% (a)	39.3%	31.2% (b) *	35.1%	
Percent of women with Pap smear in previous year	53.6%	37.1% (b)	34.3% (a)	39.2% *	29.6% (b) *	29.4%	(a)
Barriers to Care							
Percent reporting a health problem and not receiving care	8.0%	6.3% (b)	5.6% (a)	12.1% *	6.3% (b)	7.8%	(a) *
Of those, percent reporting a financial barrier	45.5%	45.2%	39.2%	61.0% *	59.4%	59.1%	*
Satisfaction with Care							
Percent satisfied with:							
Quality of medical care	95.0%	96.9% (b)	96.6% (a)	91.5% *	94.5% *	95.4%	(a)
Availability of medical care	88.1%	93.3% (b)	94.5% (a)	90.6%	93.6%	96.0%	(a)
Ease of getting to doctor	94.1%	94.6%	95.3% (a)	90.7% *	92.5% *	92.2%	*
Costs of medical care	71.0%	80.0% (b)	83.6% (c) (a)	69.5%	80.6% (b)	83.6%	(a)

(*) Significantly different from those with Medicare and private insurance (p<0.05)

(a) Significantly different between 1991 and 1993.
(b) Significantly different between 1991 and 1992.
(c) Significantly different between 1992 and 1993.

NOTE: Age-adjusted using the direct method of standardization.

SOURCES: Medicare Current Beneficiary Survey, Rounds 1, 4 and 7 Data, Medicare NCH Claims for MCBS Population. Primary analyses by the Center for Health Economics Research.

TABLE VIII-9

DETERMINANTS OF SELECTED ACCESS, UTILIZATION AND SATISFACTION MEASURES IN THE MEDICARE POPULATION
(Standard Errors in Parentheses)

	LOGISTIC REGRESSION									WLS
	Has a Regular Source of Care	Any Physician Visit	Outpatient Department Visit	Emergency Room Visit	Inpatient Stay	Satisfied With Quality	Satisfied With Availability	Satisfied With Costs	Faced Barriers to Care	Ln of the Number of Office Visits/Conv. Per Year
Year										
1992	-0.1153 *	0.3407 ***	0.3090 ***	0.2808 ***	0.0282	0.3817 ***	0.4885 ***	0.4701 ***	-0.1972 ***	0.0720 ***
	(0.0577)	(0.0478)	(0.0444)	(0.0428)	(0.0508)	(0.0644)	(0.1016)	(0.0479)	(0.0542)	(0.0132)
1993	0.0014	0.4780 ***	0.4839 ***	0.3573 ***	0.1770 ***	0.3899 ***	0.6889 ***	0.7460 ***	-0.3121 ***	0.0525 ***
	(0.0795)	(0.0430)	(0.0466)	(0.0516)	(0.0487)	(0.0830)	(0.1080)	(0.0620)	(0.0557)	(0.0146)
1991 (Omitted)										
Medicare Payment Change	0.0115 *	-0.0070	0.0029	0.0048	0.0012	0.0087	0.0238 **	0.0045	0.0026	-0.0035 *
	(0.0060)	(0.0043)	(0.0043)	(0.0040)	(0.0048)	(0.0062)	(0.0098)	(0.0044)	(0.0052)	(0.0018)
Interaction of Year*Medicare Payment Change										
1992	0.0017	0.0022	0.0048	-0.0012	-0.0097	-0.0027	-0.0160	-0.0124 **	-0.0030	-0.0014
	(0.0077)	(0.0046)	(0.0047)	(0.0043)	(0.0047)	(0.0078)	(0.0114)	(0.0048)	(0.0079)	(0.0013)
1993	-0.0052	0.0012	0.0081	0.0048	-0.0025	-0.0050	0.0047	0.0017	-0.0138 *	-0.0027
	(0.0089)	(0.0044)	(0.0050)	(0.0049)	(0.0080)	(0.0077)	(0.0100)	(0.0053)	(0.0067)	(0.0017)
1991 (Omitted)										
Age	-0.0132	-0.0213	0.0408 ***	-0.0547 ***	-0.0914 ***	0.0149	0.0208	-0.0070	0.0537 ***	0.0193 ***
	(0.0167)	(0.0138)	(0.0097)	(0.0089)	(0.0118)	(0.0216)	(0.0188)	(0.0111)	(0.0150)	(0.0048)
Age-Squared	0.0002	0.0003 **	-0.0004 ***	0.0004 ***	0.0008 ***	-0.0001	0.0000	0.0001	-0.0007 ***	-0.0001 **
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0002)	(0.0002)	(0.0001)	(0.0001)	(0.0000)
Sex										
Male	-0.3741 ***	-0.4748 ***	-0.0486	0.0839 *	0.1680 ***	-0.1204	0.0886	0.1993 ***	-0.3377 ***	0.0413 **
	(0.0771)	(0.0617)	(0.0411)	(0.0482)	(0.0569)	(0.0808)	(0.0936)	(0.0509)	(0.0685)	(0.0201)
(Female omitted)										
Race/Ethnicity										
Black	0.2796 **	-0.2151	0.1317 *	0.2288 ***	-0.3486 ***	-0.2148 *	0.1579	-0.1247 *	-0.2121 *	0.0165
	(0.1283)	(0.1308)	(0.0774)	(0.0830)	(0.0974)	(0.1168)	(0.1668)	(0.0729)	(0.1178)	(0.0336)
Hispanic	-0.2100	-0.1873	-0.0448	-0.0849	-0.3023 **	0.0017	0.3387	0.1983 *	0.0573	0.0491
	(0.1557)	(0.1821)	(0.1189)	(0.1148)	(0.1189)	(0.2107)	(0.2278)	(0.1043)	(0.1480)	(0.0551)
Other	-0.0118	0.1622	-0.0152	0.0281	-0.3289 *	-0.1128	-0.0430	0.0406	0.1665	0.0265
	(0.2628)	(0.2201)	(0.1679)	(0.1821)	(0.1827)	(0.2565)	(0.2822)	(0.1614)	(0.2430)	(0.0626)
(White omitted)										
Educational Status										
Less than 12 years	-0.2681 ***	-0.3886 ***	-0.3271 ***	0.0827 *	-0.1102	0.0874	0.4545 ***	0.0847	0.0821	-0.0321
	(0.0985)	(0.0722)	(0.0511)	(0.0546)	(0.0722)	(0.1066)	(0.1311)	(0.0629)	(0.1125)	(0.0283)
12 years	-0.2575 **	-0.3386 ***	-0.3056 ***	-0.0747	-0.0980	-0.1121	0.3417 ***	0.1131 *	-0.1370	-0.0228
	(0.1087)	(0.0756)	(0.0524)	(0.0540)	(0.0853)	(0.1185)	(0.1140)	(0.0650)	(0.1022)	(0.0272)
(More than 12 years omitted)										
Living Arrangement										
Living with spouse	0.1579 *	0.0255	0.0057	-0.2120 ***	-0.0899 *	0.3033 ***	-0.0810	-0.2164 ***	-0.1958 **	-0.0611 ***
	(0.0852)	(0.0671)	(0.0536)	(0.0557)	(0.0523)	(0.1000)	(0.1088)	(0.0566)	(0.0862)	(0.0230)
Living with other	-0.0271	-0.1893 **	-0.0366	-0.0448	-0.0911	0.1807	0.0191	-0.0880	-0.0726	-0.1026 ***
	(0.1081)	(0.0807)	(0.0686)	(0.0811)	(0.0888)	(0.1177)	(0.1131)	(0.0622)	(0.0917)	(0.0251)
(Living alone Omitted)										
Income Status										
Less than $10,000	-0.3086 **	-0.8838 ***	-0.2886 ***	-0.0803	-0.0809	-0.4686 **	-0.0228	-0.8311 ***	0.3631 **	0.0017
	(0.1484)	(0.1144)	(0.0844)	(0.0827)	(0.1081)	(0.2081)	(0.1482)	(0.0912)	(0.1468)	(0.0301)
$10,001 to $20,000	-0.2801 *	-0.4033 ***	-0.1212	-0.2344	0.0274	-0.2662	-0.0089	-0.3804 ***	0.3197 **	0.0367
	(0.1398)	(0.1289)	(0.0771)	(0.0951)	(0.1062)	(0.2000)	(0.1848)	(0.0739)	(0.1387)	(0.0300)
$20,001 to $35,000	-0.1116	-0.1625	-0.0521	0.0814	-0.0269	-0.3875 *	0.0784	-0.1691 *	0.1363	0.0310
	(0.1388)	(0.1304)	(0.0728)	(0.0813)	(0.1040)	(0.2157)	(0.1625)	(0.0951)	(0.1401)	(0.0307)
(Greater than $35,000 omitted)										
Supplemental Coverage										
Medicaid	0.8577 ***	0.8275 ***	0.0603	0.3625 ***	0.5674 ***	0.3913 ***	0.1004	1.4885 ***	-0.8045 ***	0.3582 ***
	(0.1210)	(0.1079)	(0.0834)	(0.0867)	(0.1128)	(0.1473)	(0.1888)	(0.1221)	(0.1271)	(0.0390)
Private	1.1287 ***	1.0838 ***	0.0864	0.1088	0.2862 ***	0.2080 *	0.0188	0.3758 ***	-0.5677 ***	0.2175 ***
	(0.1045)	(0.0952)	(0.0884)	(0.0724)	(0.1011)	(0.1048)	(0.1414)	(0.0742)	(0.0893)	(0.0368)
Other or Combination	1.2804 ***	1.0113 ***	0.2288 **	0.4011 ***	0.3879 ***	0.0377	0.2347	0.5888 ***	-0.5780 ***	0.2783 ***
	(0.1563)	(0.1391)	(0.0954)	(0.0897)	(0.1193)	(0.1497)	(0.2014)	(0.1055)	(0.1300)	(0.0449)
(No supplemental coverage omitted)										

TABLE VIII-9 (continued)

DETERMINANTS OF SELECTED ACCESS, UTILIZATION AND SATISFACTION MEASURES IN THE MEDICARE POPULATION
(Standard Errors in Parentheses)

	LOGISTIC REGRESSION									WLS
	Has a Regular Source of Care	Any Physician Visit	Outpatient Department Visit	Emergency Room Visit	Inpatient Stay	Satisfied With Quality	Satisfied With Availability	Satisfied With Costs	Faced Barriers to Care	Ln of the Number of Office Visits/Contacts Per year
Regular Source of Care										
Physician's office	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.4126 ***
										(0.0369)
Other place with regular MD	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.2606 ***
										(0.0389)
Other place without regular MD	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-0.0046
(No regular source omitted)										(0.0662)
Physicians Per Capita	0.0319	-0.2700	0.6130 ***	-0.4044 **	0.2226	0.8444 *	0.9784 **	-0.3448	0.2939	0.0842
	(0.3232)	(0.2718)	(0.1681)	(0.2017)	(0.1689)	(0.3884)	(0.3801)	(0.2284)	(0.2941)	(0.1096)
Perceived Health Status										
Very Good	0.3784 ***	0.4227 ***	0.2721 ***	0.3178 ***	0.2884 ***	-0.0910	-0.2247	-0.1713 **	0.4162 ***	0.1311 ***
	(0.0847)	(0.0871)	(0.0849)	(0.0845)	(0.0768)	(0.1418)	(0.1480)	(0.0898)	(0.1309)	(0.0210)
Good	0.7123 ***	0.9995 ***	0.4621 ***	0.5462 ***	0.7084 ***	-0.2817 **	-0.1628	-0.4229 ***	0.8929 ***	0.3243 ***
	(0.0864)	(0.0763)	(0.0866)	(0.0858)	(0.0757)	(0.1302)	(0.1398)	(0.0743)	(0.1390)	(0.0263)
Fair	1.0123 ***	1.2383 ***	0.7926 ***	0.8056 ***	0.8839 ***	-0.8564 ***	-0.2746 *	-0.8864 ***	1.2374 ***	0.4988 ***
	(0.0920)	(0.0785)	(0.0837)	(0.0728)	(0.0675)	(0.1464)	(0.1472)	(0.0913)	(0.1483)	(0.0277)
Poor	1.1454 ***	1.3808 ***	0.8864 ***	1.2891 ***	1.4632 ***	-1.3855 ***	-0.6002 ***	-1.0257 ***	1.5408 ***	0.6242 ***
	(0.1611)	(0.1228)	(0.0820)	(0.0840)	(0.0860)	(0.1536)	(0.1668)	(0.0800)	(0.1480)	(0.0384)
(Excellent health status omitted)										
Level of Dependency										
IADL only	0.0888	0.2324 **	0.0401	0.2177 ***	0.3161 ***	-0.3517 ***	-0.4836 ***	-0.1134	0.2815 **	0.1014 ***
	(0.1142)	(0.0821)	(0.0884)	(0.0718)	(0.0834)	(0.1121)	(0.1618)	(0.0841)	(0.1203)	(0.0268)
1-2 ADLs	0.3396 ***	0.2872 ***	0.1256 ***	0.3080 ***	0.3256 ***	-0.4163 ***	-0.4822 ***	-0.3797 ***	0.8082 ***	0.0814 ***
	(0.0750)	(0.0824)	(0.0439)	(0.0808)	(0.0860)	(0.0875)	(0.0928)	(0.0551)	(0.0800)	(0.0194)
3-4 ADLs	0.3533 ***	0.5874 ***	0.1857 ***	0.5022 ***	0.6168 ***	-0.4988 ***	-0.8979 ***	-0.6101 ***	0.8633 ***	0.0705 **
	(0.1336)	(0.1181)	(0.0732)	(0.0718)	(0.0760)	(0.1628)	(0.1418)	(0.0708)	(0.1179)	(0.0289)
5-6 ADLs	0.2644	0.1288	0.1317	0.6997 ***	0.8435 ***	-0.5280 ***	-0.6707 ***	-0.5783 ***	0.9522 ***	-0.0475
	(0.1866)	(0.1588)	(0.0901)	(0.0844)	(0.0848)	(0.1705)	(0.1788)	(0.1128)	(0.1556)	(0.0363)
Reasonable Location										
New England	-0.5886 ***	0.0497	0.0808	0.2112	-0.0801	0.8321 *	-0.2502	0.1804	-0.0825	-0.1886 ***
	(0.1773)	(0.1533)	(0.1302)	(0.1740)	(0.1113)	(0.4413)	(0.3824)	(0.2726)	(0.1822)	(0.0562)
Middle Atlantic	-0.3647 **	0.0853	0.0285	-0.0975	0.3488 ***	0.3004 *	-0.3792 **	-0.2731 **	0.0527	-0.0159
	(0.1633)	(0.1154)	(0.0893)	(0.0788)	(0.0787)	(0.1561)	(0.1603)	(0.1122)	(0.1186)	(0.0372)
East North Central	-0.2082	-0.0125	0.2411 ***	-0.1046	0.1134	0.1435	0.1797	-0.1852 *	-0.0584	-0.1839 ***
	(0.1657)	(0.0943)	(0.0920)	(0.0781)	(0.0824)	(0.1680)	(0.1652)	(0.1049)	(0.1316)	(0.0387)
West North Central	-0.0852	0.1160	-0.1899 *	-0.4083 ***	-0.0720	0.6405 **	0.0735	0.0548	-0.5463 ***	-0.2244 ***
	(0.2109)	(0.1878)	(0.2798)	(0.0949)	(0.1728)	(0.2640)	(0.3464)	(0.1528)	(0.1388)	(0.0572)
South Atlantic	-0.3394 **	0.2278 *	-0.1809	-0.2105 **	-0.0161	0.1370	0.0821	-0.1880	0.1801 *	-0.1075 **
	(0.1528)	(0.1183)	(0.1001)	(0.0895)	(0.0870)	(0.1575)	(0.1428)	(0.1102)	(0.1128)	(0.0430)
East South Central	-0.3628 *	-0.1372	-0.2873 **	-0.2586 *	0.2808 **	0.1048	0.5383 **	0.2153	-0.3037 **	-0.1952 ***
	(0.1871)	(0.1297)	(0.1228)	(0.1349)	(0.1222)	(0.2222)	(0.2112)	(0.1415)	(0.1327)	(0.0488)
West South Central	-0.8043 ***	-0.1388	-0.1871 *	-0.1457 *	0.0546	0.1804	-0.3282	-0.1678	0.0342	-0.2265 ***
	(0.1567)	(0.1197)	(0.1121)	(0.0789)	(0.0770)	(0.1647)	(0.2139)	(0.1374)	(0.1227)	(0.0444)
Mountain	-0.4830 **	-0.1801	-0.0099	0.1628	-0.0979	-0.0488	0.2715	-0.0912	-0.0828	-0.1757 *
	(0.2019)	(0.1503)	(0.1956)	(0.1033)	(0.1695)	(0.3454)	(0.1691)	(0.1531)	(0.1212)	(0.0945)
(Pacific omitted)										
Urban	0.0821	0.0128	-0.2842 **	0.0797	-0.0849	-0.0814	0.1627	0.0853	-0.1813	-0.0024
	(0.1099)	(0.0898)	(0.1047)	(0.0753)	(0.0712)	(0.1161)	(0.1575)	(0.0888)	(0.1118)	(0.0268)
(Rural omitted)										
Intercept	1.5020 ***	0.8836 ***	-2.2052 ***	-0.4744	-2.6487 ***	2.6912 ***	0.5695	1.2737 ***	-3.2626 ***	-0.2004
	(0.6041)	(0.4234)	(0.3431)	(0.3360)	(0.4188)	(0.7487)	(0.6743)	(0.4156)	(0.4279)	(0.1564)
(Pseudo) R-squared	0.0484	0.0783	0.0425	0.0894	0.0839	0.0301	0.0347	0.0754	0.0801	0.1144
N	21,896	21,830	21,916	21,830	21,840	21,885	11,425	21,836	21,911	16,244
Minus log-likelihood	8,219	7,848	13,449	10,283	8,382	3,628	2,882	10,593	5,374	N/A

N/A = not applicable
WLS = Weighted least squares regression.

*: Significant at 0.10 level.
**: Significant at 0.05 level.
***Significant at 0.01 level

SOURCE: Medicare Current Beneficiary Survey, Rounds 1, 4 and 7 Data. Medicare NCH Claims for MCBS Population. Primary analyses by the Center for Health Economics Research

TABLE VIII-10

DETERMINANTS OF SELECTED UTILIZATION MEASURES BY AGE AND LEVEL OF DEPENDENCY
(Standard Errors in Parentheses)

	ANY PHYSICIAN VISIT				FACED BARRIERS TO CARE			
	Disabled (Under Age 65)		Elderly (Over Age 65)		Disabled (Under Age 65)		Elderly (Over Age 65)	
	None or IADLs	1+ ADLs	None or IADLs	1+ ADLs	None or IADLs	1+ ADLs	None or IADLs	1+ ADLs
Year								
1992	0.2693 **	0.1957	0.3758 ***	0.3630 ***	0.2791	-0.1999	-0.2188 **	-0.2167 **
	(0.1351)	(0.1539)	(0.0582)	(0.1014)	(0.1782)	(0.1293)	(0.1007)	(0.1052)
1993	0.3233 **	-0.0614	0.5440 ***	0.4456 ***	0.0293	-0.1291	-0.2906 **	-0.3530 ***
	(0.1608)	(0.1442)	(0.0504)	(0.1215)	(0.1597)	(0.1326)	(0.1121)	(0.1054)
1991 (Omitted)								
Medicare Payment Change	-0.0077	0.0074	-0.0111 *	-0.0008	-0.0232	0.0096	-0.0067	0.0050
	(0.0111)	(0.0097)	(0.0061)	(0.0099)	(0.0195)	(0.0115)	(0.0119)	(0.0114)
Interaction of Year*Medicare Payment Change								
1992	0.0125	0.0072	0.0051	0.0052	0.0079	-0.0082	0.0005	0.0026
	(0.0131)	(0.0149)	(0.0052)	(0.0111)	(0.0183)	(0.0136)	(0.0120)	(0.0118)
1993	-0.0075	0.0002	0.0021	0.0187	0.0125	-0.0055	-0.0034	-0.0189
	(0.0105)	(0.0122)	(0.0050)	(0.0121)	(0.0178)	(0.0126)	(0.0117)	(0.0187)
1991 (Omitted)								
Age	-0.0094	-0.0396	0.2129 *	0.5202 ***	-0.0023	0.0599	-0.0274	-0.1182
	(0.0537)	(0.0547)	(0.1216)	(0.1139)	(0.0808)	(0.0441)	(0.1929)	(0.1443)
Age-Squared	0.0001	0.0007	-0.0012	-0.0032 ***	-0.0002	-0.0007	-0.0001	0.0005
	(0.0006)	(0.0006)	(0.0008)	(0.0007)	(0.0007)	(0.0006)	(0.0013)	(0.0009)
Sex								
Male	-0.4944 ***	-0.7827 ***	-0.4277 ***	-0.7583 ***	0.1033	-0.2181 *	-0.6042 ***	-0.2853 ***
	(0.1766)	(0.1527)	(0.0726)	(0.1120)	(0.2022)	(0.1287)	(0.1089)	(0.1085)
(Female omitted)								
Race/Ethnicity								
Black	-0.0822	-0.1288	-0.3399 **	0.1006	-0.1237	-0.0015	-0.3624 *	-0.2407
	(0.1934)	(0.1782)	(0.1402)	(0.2413)	(0.2078)	(0.1754)	(0.2109)	(0.1824)
Hispanic	0.5803	0.0692	-0.3317 *	0.0751	-0.0328	0.1273	0.1157	-0.2409
	(0.3723)	(0.3436)	(0.1770)	(0.2786)	(0.3837)	(0.2584)	(0.2534)	(0.2851)
Other	-0.1130	-0.5170	0.2575	0.2093	0.4088	0.8406 **	-0.0902	0.2233
	(0.5632)	(0.5191)	(0.2671)	(0.4215)	(0.5899)	(0.3946)	(0.4903)	(0.3082)
(White omitted)								
Educational Status								
Less than 12 years	-0.5354 **	-0.1823	-0.3937 ***	-0.2809 *	0.0361	0.0543	-0.0658	0.1665
	(0.2313)	(0.2080)	(0.0960)	(0.1390)	(0.2884)	(0.2097)	(0.1785)	(0.1674)
12 years	-0.2495	0.1040	-0.3864 ***	-0.2053	-0.1823	-0.1136	-0.2713	0.0332
	(0.2347)	(0.2312)	(0.0927)	(0.1541)	(0.2527)	(0.1677)	(0.1650)	(0.1532)
(More than 12 years omitted)								
Living Arrangement								
Living with spouse	0.0491	0.0818	0.0515	-0.0126	-0.0118	0.0762	-0.1235	-0.2230
	(0.2857)	(0.2426)	(0.1120)	(0.1467)	(0.2774)	(0.2206)	(0.1199)	(0.1376)
Living with other	-0.1232	0.0931	-0.2008 *	-0.1185	-0.2484	-0.1911	0.2041	-0.0667
	(0.2169)	(0.2391)	(0.1156)	(0.1423)	(0.2219)	(0.2150)	(0.1624)	(0.1193)
(Living alone Omitted)								
Income Status								
Less than $10,000	-0.7808	-0.6367	-0.8092 ***	-0.9712 ***	0.8134	-0.0894	0.3561 *	0.5303 *
	(0.5030)	(0.5046)	(0.1402)	(0.2945)	(0.7648)	(0.4495)	(0.2078)	(0.3009)
$10,001 to $20,000	-0.3980	-0.4801	-0.4452 ***	-0.6479 **	0.8249	0.0907	0.3242	0.4080
	(0.5220)	(0.5072)	(0.1460)	(0.3059)	(0.7483)	(0.4097)	(0.2144)	(0.2975)
$20,001 to $35,000	-0.4098	-0.4747	-0.1786	-0.3817	0.7644	-0.8234 **	0.2518	0.2348
	(0.5421)	(0.5018)	(0.1499)	(0.3191)	(0.7985)	(0.3980)	(0.1647)	(0.3131)
(Greater than $35,000 omitted)								

TABLE VIII-10 (continued)

DETERMINANTS OF SELECTED UTILIZATION MEASURES BY AGE AND LEVEL OF DEPENDENCY
(Standard Errors in Parentheses)

	ANY PHYSICIAN VISIT				FACED BARRIERS TO CARE			
	Disabled (Under Age 65)		Elderly (Over Age 65)		Disabled (Under Age 65)		Elderly (Over Age 65)	
	None or IADLs	1+ ADLs	None or IADLs	1+ ADLs	None or IADLs	1+ ADLs	None or IADLs	1+ ADLs
Supplemental Coverage								
Medicaid	0.6576 ***	0.6115 ***	0.7636 ***	1.1259 ***	-0.5646 **	-0.6847 ***	-0.5227 **	-0.5256 **
	(0.1912)	(0.2146)	(0.1562)	(0.1906)	(0.2834)	(0.1664)	(0.2238)	(0.2243)
Private	0.9404 ***	0.8965 ***	1.1846 ***	1.0107 ***	-0.8469 ***	-0.5857 ***	-0.6096 ***	-0.5044 ***
	(0.2196)	(0.1967)	(0.1362)	(0.1174)	(0.2437)	(0.1672)	(0.1576)	(0.1729)
Other or Combination	0.8354 ***	0.9603 ***	1.2310 ***	0.8630 ***	-0.5331 *	-0.8659 ***	-0.8436 ***	-0.3677 *
	(0.2823)	(0.2626)	(0.1676)	(0.2189)	(0.2733)	(0.2070)	(0.2600)	(0.2218)
(No supplemental coverage omitted)								
Physicians Per Capita	-0.9290	-1.1302 *	-0.1132	-0.4361	0.4662	0.1910	0.5416	0.0260
	(0.7116)	(0.6603)	(0.3581)	(0.4603)	(0.7141)	(0.5616)	(0.5037)	(0.4349)
Perceived Health Status								
Very Good	0.5365 **	0.4387	0.4730 ***	0.1449	0.0210	-0.1698	0.4427 ***	0.3385
	(0.2150)	(0.2876)	(0.0821)	(0.1516)	(0.3225)	(0.3204)	(0.1655)	(0.2221)
Good	1.1018 ***	1.4424 ***	1.0405 ***	0.7520 ***	0.4867	0.4078	0.7712 ***	0.4808 **
	(0.1956)	(0.2351)	(0.0895)	(0.1488)	(0.3185)	(0.2498)	(0.1793)	(0.2325)
Fair	1.2877 ***	1.2999 ***	1.4541 ***	0.7136 ***	1.1338 ***	1.0320 ***	1.4767 ***	0.9552 ***
	(0.2316)	(0.2628)	(0.1330)	(0.1446)	(0.3278)	(0.2553)	(0.2081)	(0.2454)
Poor	1.5788 ***	1.7895 ***	1.7113 ***	0.6556 ***	1.5311 ***	1.3425 ***	1.7394 ***	1.3507 ***
	(0.2537)	(0.2827)	(0.3390)	(0.1911)	(0.3324)	(0.2577)	(0.2626)	(0.2632)
(Excellent health status omitted)								
Geographic Location								
New England	0.1625	1.7465 ***	-0.0287	-0.1256	-0.7208	0.4436	-0.0436	-0.7214
	(0.4694)	(0.5030)	(0.1899)	(0.2808)	(0.4676)	(0.3329)	(0.1999)	(0.4378)
Middle Atlantic	-0.1035	0.4167 *	0.0673	0.3850 *	-0.3940	-0.3091	-0.1055	0.1956
	(0.3023)	(0.2358)	(0.1509)	(0.2175)	(0.3220)	(0.2855)	(0.1980)	(0.1789)
East North Central	0.4027	0.0890	-0.0287	0.0795	-0.0853	-0.2411	-0.0854	0.0169
	(0.2850)	(0.2620)	(0.1218)	(0.2133)	(0.3620)	(0.2746)	(0.2119)	(0.1695)
West North Central	0.0082	-0.0571	0.1454	-0.0533	-0.5533	-0.3486	-0.9338 ***	-0.2748
	(0.3859)	(0.2871)	(0.1934)	(0.2481)	(0.4434)	(0.3303)	(0.2960)	(0.2497)
South Atlantic	0.0890	0.0572	0.2739 *	0.0439	0.0436	-0.2094	0.1063	0.3712 **
	(0.3721)	(0.3036)	(0.1466)	(0.2243)	(0.3185)	(0.2067)	(0.1850)	(0.1798)
East South Central	-0.3466	-0.0578	0.0036	-0.2752	-0.8860 **	-0.3570	-0.5329 *	-0.1423
	(0.3008)	(0.2546)	(0.1773)	(0.2620)	(0.3766)	(0.2392)	(0.2719)	(0.1914)
West South Central	-0.3534	-0.3743	-0.0723	-0.0056	-0.3448	-0.0982	-0.1886	0.2143
	(0.2942)	(0.2274)	(0.1599)	(0.1936)	(0.4695)	(0.2121)	(0.2465)	(0.1923)
Mountain	-0.5134 *	-0.1327	-0.1164	-0.2236	-0.0658	0.1643	-0.2574	-0.0271
	(0.3047)	(0.2879)	(0.1602)	(0.2898)	(0.4869)	(0.2997)	(0.2225)	(0.2490)
(Pacific omitted)								
Urban	-0.0611	0.2338	0.0367	-0.0005	-0.1448	0.0131	-0.2224	-0.1683
	(0.2411)	(0.2025)	(0.1112)	(0.1472)	(0.3236)	(0.1790)	(0.1979)	(0.1394)
(Rural omitted)								
Intercept	1.4002	1.0549	-8.6273 *	-19.2072 ***	-2.4495	-2.3951 **	0.0444	3.5914
	(1.3753)	(1.3102)	(4.8145)	(4.4668)	(1.8161)	(1.1014)	(7.3126)	(5.7068)
(Psuedo) R-squared	0.1041	0.1186	0.0629	0.0676	0.0853	0.0822	0.0331	0.0509
N	2,002	2,436	12,186	6,326	2,001	2,446	12,222	6,358
Minus log-likelihood	934	980	4,662	1,839	719	1,212	2,121	2,031

N/A= not applicable
WLS = Weighted least squares regression.

* Significant at 0.10 level.
** Significant at 0.05 level
***Significant at 0.01 level.

SOURCE: Medicare Current Beneficiary Survey, Rounds 1, 4 and 7 Data. Medicare NCH Claims for MCBS Population. Primary analyses by the Center for Health Economics Research.

TABLE VIII-11

DETERMINANTS OF SELECTED UTILIZATION MEASURES IN THE MEDICARE POPULATION BY GENERAL HEALTH STATUS: (Standard Errors in Parentheses)

	ANY PHYSICIAN VISIT		FACED BARRIERS TO CARE	
	Fair/ Poor	Excellent/ Very Good	Fair/ Poor	Excellent/ Very Good
Year				
1992	0.1536	0.3359 ***	-0.1201	-0.2286
	(0.1019)	(0.0589)	(0.0841)	(0.1539)
1993	0.3471 ***	0.4798 ***	-0.1861 **	-0.2284
	(0.1156)	(0.0593)	(0.0786)	(0.1629)
1991 (Omitted)				
Medicare Payment Change	0.0028	-0.0097 *	0.0066	0.0065
	(0.0090)	(0.0051)	(0.0101)	(0.0150)
Interaction of Year*Medicare Payment Change				
1992	-0.0042	0.0015	-0.0157	-0.0010
	(0.0127)	(0.0059)	(0.0101)	(0.0158)
1993	-0.0026	-0.0015	-0.0198	-0.0201
	(0.0116)	(0.0065)	(0.0120)	(0.0168)
1991 (Omitted)				
Age	0.0202	-0.0485 **	0.0800 ***	0.0471
	(0.0280)	(0.0222)	(0.0186)	(0.0340)
Age-Squared	-0.0001	0.0005 ***	-0.0007 ***	-0.0006 **
	(0.0002)	(0.0002)	(0.0002)	(0.0003)
Sex				
Male	-0.7190 ***	-0.4138 ***	-0.2099 **	-0.5304 ***
	(0.1063)	(0.0842)	(0.0858)	(0.1462)
(Female omitted)				
Race/Ethnicity				
Black	-0.1216	-0.2237	-0.2391 *	-0.4686
	(0.1932)	(0.1428)	(0.1271)	(0.3025)
Hispanic	0.0980	-0.4395 **	0.0441	0.2873
	(0.2372)	(0.2175)	(0.1951)	(0.2971)
Other	0.6334 *	-0.2378	0.4301	-0.4885
	(0.3288)	(0.2680)	(0.2940)	(0.6383)
(White omitted)				
Educational Status				
Less than 12 years	-0.4745 ***	-0.2639 **	0.3274 **	-0.0334
	(0.1683)	(0.1015)	(0.1516)	(0.2053)
12 years	-0.3333 *	-0.3359 ***	0.1802	-0.2964
	(0.1678)	(0.1023)	(0.1626)	(0.1982)
(More than 12 years omitted)				
Living Arrangement				
Living with spouse	0.1022	0.0039	-0.2065 *	-0.0480
	(0.1782)	(0.0981)	(0.1122)	(0.1354)
Living with other	-0.1557	-0.2375 **	-0.2145 *	0.1555
	(0.1389)	(0.1165)	(0.1237)	(0.1805)
(Living alone Omitted)				
Income Status				
Less than $10,000	-0.1013	-0.6050 ***	0.0955	0.2740
	(0.2917)	(0.1285)	(0.2712)	(0.2836)
$10,001 to $20,000	0.0161	-0.3617 **	0.0897	0.0959
	(0.2903)	(0.1483)	(0.2547)	(0.2402)
$20,001 to $35,000	0.2486	-0.1912	-0.2848	0.0458
	(0.3192)	(0.1386)	(0.2954)	(0.2192)
(Greater than $35,000 omitted)				

TABLE VIII-11 (continued)

DETERMINANTS OF SELECTED UTILIZATION MEASURES IN THE MEDICARE POPULATION BY GENERAL HEALTH STATUS: (Standard Errors in Parentheses)

	ANY PHYSICIAN VISIT		FACED BARRIERS TO CARE	
	Fair/ Poor	Excellent/ Very Good	Fair/ Poor	Excellent/ Very Good
Supplemental Coverage				
Medicaid	0.8718 ***	0.7894 ***	-0.6627 ***	-0.5624 **
	(0.1621)	(0.1770)	(0.1678)	(0.2593)
Private	1.0519 ***	1.1869 ***	-0.6607 ***	-0.5363 ***
	(0.1385)	(0.1323)	(0.1236)	(0.1986)
Other or Combination	0.8591 ***	1.0746 ***	-0.7836 ***	-0.4487
	(0.2063)	(0.1918)	(0.1614)	(0.2966)
(No supplemental coverage omitted)				
Physicians Per Capita	-0.7895	-0.0467	0.3904	-0.1489
	(0.4968)	(0.3594)	(0.3767)	(0.5958)
Level of Dependency				
IADL only	-0.0365	0.1877	0.1388	0.5855 ***
	(0.1855)	(0.1431)	(0.1591)	(0.2129)
1-2 ADLs	-0.1122	0.4246 ***	0.5373 ***	0.8218 ***
	(0.1420)	(0.1059)	(0.1179)	(0.1691)
3-4 ADLs	0.2415	0.9940 ***	0.8680 ***	1.2761 ***
	(0.1903)	(0.2456)	(0.1474)	(0.2901)
5-6 ADLs	-0.0580	0.9780 ***	0.9368 ***	1.1001 **
	(0.2183)	(0.3541)	(0.1510)	(0.4214)
(No ADL/IADL omitted)				
Geographic Location				
New England	0.0642	0.1653	0.1453	-0.0787
	(0.2946)	(0.1834)	(0.4058)	(0.2800)
Middle Atlantic	0.2457	0.0448	0.4289 **	0.0575
	(0.1775)	(0.1556)	(0.1916)	(0.2396)
East North Central	0.0560	-0.0009	0.2135	-0.0750
	(0.2143)	(0.1129)	(0.2038)	(0.2957)
West North Central	0.3448	0.0942	-0.2880	-0.7536 **
	(0.2882)	(0.1703)	(0.2371)	(0.3428)
South Atlantic	0.0802	0.1534	0.5797 ***	0.0816
	(0.2208)	(0.1318)	(0.1706)	(0.2225)
East South Central	-0.2213	0.0158	-0.0094	-0.1738
	(0.2252)	(0.1785)	(0.2029)	(0.3020)
West South Central	-0.1304	-0.0464	0.3314 **	-0.0931
	(0.2041)	(0.1305)	(0.1672)	(0.2440)
Mountain	0.0371	-0.2376 *	0.2483	-0.1855
	(0.3532)	(0.1371)	(0.2457)	(0.2793)
(Pacific omitted)				
Urban	-0.0155	0.0029	-0.2336 *	0.0106
	(0.1976)	(0.1006)	(0.1371)	(0.2315)
(Rural omitted)				
Intercept	1.1691	1.8445 ***	-2.1552 ***	-3.0428 ***
	(0.9711)	(0.6877)	(0.6406)	(1.1171)
(Psuedo) R-squared	0.0604	0.0733	0.0706	0.0166
N	8,391	9,004	8,413	9,039
Minus log-likelihood	1,905	3,941	2,879	1,364

N/A = not applicable

* Significant at 0.10 level.
** Significant at 0.05 level.
***Significant at 0.01 level.

SOURCE: Medicare Current Beneficiary Survey, Rounds 1, 4 and 7 Data. Medicare NCH Claims for MCBS Population. Primary analyses by the Center for Health Economics Research.

TABLE VIII-12

DETERMINANTS OF SELECTED UTILIZATION MEASURES IN THE MEDICARE POPULATION BY INCOME
(Standard Errors in Parentheses)

	ANY PHYSICIAN VISIT		FACED BARRIERS TO CARE	
	Low Income	High Income	Low Income	High Income
Year				
1992	0.2943 ***	0.4112 ***	-0.2537 ***	0.1032
	(0.0580)	(0.1129)	(0.0675)	(0.1291)
1993	0.4203 ***	0.5992 ***	-0.2982 ***	-0.4019 ***
	0.0556	0.1130	0.0603	0.1498
1991 (Omitted)				
Medicare Payment Change	-0.0090 *	-0.0018	0.0037	-0.0048
	(0.0052)	(0.0077)	(0.0085)	(0.0152)
Interaction of Year*Medicare Payment Change				
1992	0.0066	-0.0123	-0.0077	0.0177
	(0.0062)	(0.0103)	(0.0068)	(0.0153)
1993	0.0041	-0.0061	-0.0143	-0.0160
	(0.0054)	(0.0117)	(0.0101)	(0.0171)
1991 (Omitted)				
Age	-0.0187	-0.0164	0.0536 ***	0.0465
	(0.0140)	(0.0440)	(0.0156)	(0.0521)
Age-Squared	0.0003 **	0.0003	-0.0007 ***	-0.0006
	(0.0001)	(0.0003)	(0.0001)	(0.0004)
Sex				
Male	-0.4601 ***	-0.4688 ***	-0.2386 ***	-0.7389 ***
	(0.0619)	(0.1186)	(0.0755)	(0.1403)
(Female omitted)				
Race/Ethnicity				
Black	-0.2279	-0.1263	-0.2085 *	-0.4842 *
	(0.1380)	(0.2864)	(0.1225)	(0.2778)
Hispanic	-0.0529	-0.9336 **	0.0136	0.4743
	(0.2025)	(0.4045)	(0.1551)	(0.3711)
Other	0.1475	0.3169	0.1592	0.3640
	(0.2379)	(0.5224)	(0.2615)	(0.5582)
(White omitted)				
Educational Status				
Less than 12 years	-0.3755 ***	-0.3837 **	0.0803	0.0974
	(0.0744)	(0.1483)	(0.1274)	(0.1809)
12 years	-0.2484 ***	-0.5124 ***	-0.1268	-0.1710
	(0.0931)	(0.1227)	(0.1211)	(0.1735)
(More than 12 years omitted)				
Living Arrangement				
Living with spouse	0.1005	-0.1470	-0.2327 **	-0.1287
	(0.0881)	(0.2044)	(0.0936)	(0.2059)
Living with other	-0.1759 **	-0.6169 **	-0.0892	0.0055
	(0.0850)	(0.2604)	(0.0933)	(0.3070)
(Living alone Omitted)				
Supplemental Coverage				
Medicaid	0.7786 ***	0.6740	-0.5850 ***	-1.4478 *
	(0.1103)	(0.8882)	(0.1277)	(0.8006)
Private	1.0799 ***	1.2375 ***	-0.5919 ***	-0.3675
	(0.0954)	(0.2011)	(0.0950)	(0.3144)
Other or Combination	1.0452 ***	0.6452 **	-0.5879 ***	-0.1579
	(0.1412)	(0.3187)	(0.1334)	(0.5081)
(No supplemental coverage omitted)				

TABLE VIII-12 (continued)

DETERMINANTS OF SELECTED UTILIZATION MEASURES IN THE MEDICARE POPULATION BY INCOME
(Standard Errors in Parentheses)

	ANY PHYSICIAN VISIT		FACED BARRIERS TO CARE	
	Low Income	High Income	Low Income	High Income
Physicians Per Capita	-0.4583	0.5201	0.2748	0.2464
	(0.2896)	(0.5851)	(0.3055)	(0.8822)
Perceived Health Status				
Very Good	0.4213 ***	0.4029 ***	0.2892 *	0.7575 ***
	(0.0710)	(0.1316)	(0.1538)	(0.2123)
Good	0.9898 ***	1.0862 ***	0.6397 ***	0.6717 ***
	(0.0910)	(0.1484)	(0.1635)	(0.2336)
Fair	1.2120 ***	1.2878 ***	1.1614 ***	1.3864 ***
	(0.0874)	(0.2424)	(0.1696)	(0.2899)
Poor	1.2161 ***	1.4431 ***	1.4881 ***	1.6399 ***
	(0.1327)	(0.2975)	(0.1686)	(0.3042)
(Excellent health status omitted)				
Level of Dependency				
IADL only	0.2240 **	0.1956	0.2265 *	0.6676 **
	(0.0999)	(0.2788)	(0.1293)	(0.2798)
1-2 ADLs	0.2759 ***	0.3474 **	0.6251 ***	0.5061 ***
	(0.0824)	(0.1594)	(0.0819)	(0.1833)
3-4 ADLs	0.8437 ***	0.2846	0.9376 ***	0.4619
	(0.1224)	(0.2883)	(0.1249)	(0.2941)
5-6 ADLs	0.2461	-0.8177 *	0.8776 ***	1.3225 ***
	(0.1704)	(0.3640)	(0.1562)	(0.3628)
(No ADL/IADL omitted)				
Geographic Location				
New England	-0.0029	0.1350	0.1743	-1.1240 ***
	(0.2231)	(0.4387)	(0.2143)	(0.3349)
Middle Atlantic	0.1345	-0.0826	0.0404	0.2498
	(0.1396)	(0.1619)	(0.1486)	(0.1611)
East North Central	0.0514	-0.1973	0.0436	-0.3781 *
	(0.1270)	(0.1480)	(0.1652)	(0.2199)
West North Central	0.1581	0.0029	-0.4521 ***	-0.8863 ***
	(0.1950)	(0.2808)	(0.1581)	(0.2956)
South Atlantic	0.2676 *	0.1011	0.2713 *	0.0594
	(0.1464)	(0.1836)	(0.1407)	(0.2072)
East South Central	-0.0611	-0.4911 **	-0.1829	-0.7506 **
	(0.1456)	(0.2434)	(0.1671)	(0.3075)
West South Central	-0.1660	0.0130	0.1498	-0.4229
	(0.1282)	(0.2403)	(0.1416)	(0.2917)
Mountain	-0.2317	-0.0555	0.0220	-0.4360
	(0.2162)	(0.1356)	(0.1516)	(0.2747)
(Pacific omitted)				
Urban	0.0823	-0.1912	-0.1327	-0.4455 *
	(0.0957)	(0.1811)	(0.1129)	(0.2350)
(Rural omitted)				
Intercept	0.2354	0.6619	-3.0136 ***	-2.7021 *
	(0.4179)	(1.4314)	(0.4658)	(1.4661)
(Pseudo) R-squared	0.0649	0.0586	0.0824	0.0830
N	16,466	5,344	16,542	5,369
Minus log-likelihood	6,272	1,897	4,477	933

N/A = not applicable

* Significant at 0.10 level
** Significant at 0.05 level
***Significant at 0.01 level

SOURCE: Medicare Current Beneficiary Survey, Rounds 1, 4 and 7 Data. Medicare NCH Claims for MCBS Population. Primary analyses by the Center for Health Economics Research.

TABLE VIII-13

DETERMINANTS OF SELECTED UTILIZATION MEASURES IN THE MEDICARE POPULATION BY SUPPLEMENTAL INSURANCE COVERAGE STATUS (Standard Errors in Parentheses)

	ANY PHYSICIAN VISIT			FACED BARRIERS TO CARE		
	None	Medicaid Only	Private Only	None	Medicaid Only	Private Only
Year						
1992	0.1430	0.2374	0.4197 ***	-0.0024	-0.3332 **	-0.2194 ***
	(0.1156)	(0.1449)	(0.0529)	(0.1130)	(0.1476)	(0.0792)
1993	0.2135 *	0.2350 *	0.6011 ***	-0.0286	-0.3587 ***	-0.3915 ***
	(0.1134)	(0.1381)	(0.0535)	(0.1255)	(0.1332)	(0.0672)
1991 (Omitted)						
Medicare Payment Change	-0.0125	0.0202 *	-0.0087	-0.0044	-0.0058	0.0035
	(0.0098)	(0.0109)	(0.0054)	(0.0118)	(0.0162)	(0.0089)
Interaction of Year* Medicare Payment Change						
1992	0.0159	-0.0017	-0.0036	-0.0230 *	-0.0049	0.0011
	(0.0115)	(0.0119)	(0.0048)	(0.0125)	(0.0160)	(0.0095)
1993	0.0017	-0.0146	0.0020	-0.0003	-0.0167	-0.0139
	(0.0098)	(0.0133)	(0.0065)	(0.0151)	(0.0149)	(0.0110)
1991 (Omitted)						
Age	-0.0405	-0.0478 *	0.0163	0.0189	0.0858 ***	0.0502 *
	(0.0271)	(0.0274)	(0.0292)	(0.0318)	(0.0234)	(0.0258)
Age-Squared	0.0004 *	0.0005 **	0.0000	-0.0004	-0.0009 ***	-0.0006 ***
	(0.0002)	(0.0002)	(0.0002)	(0.0003)	(0.0002)	(0.0002)
Sex						
Male	-0.7093 ***	-0.9139 ***	-0.3348 ***	-0.0897	-0.0478	-0.5007 ***
	(0.1245)	(0.2403)	(0.0881)	(0.1948)	(0.1299)	(0.0832)
(Female omitted)						
Race/Ethnicity						
Black	-0.0143	-0.2290	-0.4007 ***	-0.2647	-0.4282 *	-0.0234
	(0.2354)	(0.2945)	(0.1504)	(0.1962)	(0.2496)	(0.1579)
Hispanic	-0.4491 **	0.3819	-0.4092	0.1298	-0.2903	0.3014
	(0.2132)	(0.2807)	(0.2819)	(0.2328)	(0.2832)	(0.2909)
Other	0.2725	0.3833	0.4339	-0.1713	0.2728	0.0066
	(0.5428)	(0.3510)	(0.3269)	(0.5144)	(0.3825)	(0.5827)
(White omitted)						
Educational Status						
Less than 12 years	-0.4089 *	-0.2786	-0.4143 ***	0.2145	-0.2636	0.1743
	(0.2122)	(0.2783)	(0.0904)	(0.2808)	(0.2717)	(0.1243)
12 years	-0.1410	-0.4207	-0.3823 ***	-0.2080	-0.2542	-0.0367
	(0.2178)	(0.3001)	(0.0936)	(0.2580)	(0.2877)	(0.1151)
(More than 12 years omitted)						
Living Arrangement						
Living with spouse	0.0612	0.2020	0.0040	-0.1918	-0.3837 **	-0.0782
	(0.1912)	(0.3404)	(0.1165)	(0.1626)	(0.1691)	(0.1094)
Living with other	-0.0257	-0.3520	-0.2829 **	-0.2172	-0.3820 *	0.1724
	(0.1422)	(0.2248)	(0.1152)	(0.2135)	(0.1844)	(0.1244)
(Living alone Omitted)						
Income Status						
Less than $10,000	-0.4529	-4.7485 ***	-0.5027 ***	1.5859 ***	3.9006 ***	0.2080
	(0.3382)	(0.3271)	(0.1320)	(0.4973)	(0.3423)	(0.1561)
$10,001 to $20,000	0.0233	-4.5038 ***	-0.4237 ***	1.5253 ***	3.9879 ***	0.1864
	(0.3277)	(0.3957)	(0.1391)	(0.4949)	(0.3784)	(0.1526)
$20,001 to $35,000	-0.0295	-5.2039 ***	-0.1267	1.0997 **	2.9549 ***	0.0405
	(0.4160)	(1.0391)	(0.1407)	(0.5474)	(0.9513)	(0.1513)
(Greater than $35,000 omitted)						

TABLE VIII-13 (continued)

DETERMINANTS OF SELECTED UTILIZATION MEASURES IN THE MEDICARE POPULATION BY SUPPLEMENTAL INSURANCE COVERAGE STATUS (Standard Errors in Parentheses)

	ANY PHYSICIAN VISIT			FACED BARRIERS TO CARE		
	None	Medicaid Only	Private Only	None	Medicaid Only	Private Only
Physicians Per Capita	-0.7026	-1.3899 **	0.3637	-0.7942	-0.0417	0.5916
	(0.6724)	(0.5895)	(0.3668)	(0.6753)	(0.5906)	(0.3615)
Perceived Health Status						
Very Good	0.4853 **	0.1625	0.4194 ***	0.0367	1.1334 **	0.4856 ***
	(0.2181)	(0.2328)	(0.0880)	(0.3099)	(0.4780)	(0.1467)
Good	1.0752 ***	0.9364 ***	0.9837 ***	0.3615	1.3187 ***	0.7456 ***
	(0.2142)	(0.2272)	(0.1025)	(0.2379)	(0.4345)	(0.1525)
Fair	1.1897 ***	1.2117 ***	1.2981 ***	1.2022 ***	1.8668 ***	1.1993 ***
	(0.2104)	(0.2430)	(0.1266)	(0.2904)	(0.4257)	(0.1865)
Poor	1.4154 ***	1.0935 ***	1.1407 ***	1.5039 ***	2.1408 ***	1.5970 ***
	(0.2650)	(0.2782)	(0.1984)	(0.2830)	(0.4479)	(0.1875)
(Excellent health status omitted)						
Level of Dependency						
IADL only	0.1627	0.6078 ***	0.1151	0.1980	-0.0262	0.4880 ***
	(0.1601)	(0.1966)	(0.1754)	(0.2248)	(0.2363)	(0.1786)
1-2 ADLs	0.2871 **	0.5806 ***	0.3226 ***	0.6607 ***	0.5074 **	0.5644 ***
	(0.1130)	(0.1785)	(0.0909)	(0.1763)	(0.2033)	(0.1054)
3-4 ADLs	0.6320 **	0.9091 ***	0.5122 ***	0.7239 ***	0.4716 *	0.9405 ***
	(0.2754)	(0.2867)	(0.1784)	(0.2628)	(0.2570)	(0.1317)
5-6 ADLs	0.0728	0.7035 **	0.0629	0.8476 ***	0.4605 **	1.1413 ***
	(0.2476)	(0.3122)	(0.2274)	(0.2859)	(0.2304)	(0.2216)
(No ADL/IADL omitted)						
Geographic Location						
New England	0.2129	0.7713	-0.1483	-0.5379	-0.4136	-0.0736
	(0.6246)	(0.5899)	(0.1805)	(0.4595)	(0.3881)	(0.2205)
Middle Atlantic	0.1714	-0.1616	-0.0864	-0.5358 *	0.2882	0.1128
	(0.2929)	(0.3190)	(0.1626)	(0.3083)	(0.3149)	(0.1384)
East North Central	0.1292	0.3802	-0.1296	-0.2858	0.2269	-0.1879
	(0.2971)	(0.3562)	(0.1351)	(0.3087)	(0.3030)	(0.1455)
West North Central	0.0437	0.3149	0.0799	-0.5337 *	0.0824	-0.4527 ***
	(0.3469)	(0.5801)	(0.1952)	(0.5082)	(0.3952)	(0.2022)
South Atlantic	0.3150	0.8024 **	0.1158	-0.3726	0.5967 **	0.1863
	(0.2877)	(0.2750)	(0.1633)	(0.2740)	(0.2899)	(0.1376)
East South Central	0.4087	-0.0707	-0.3023	-0.7127 **	0.4778	-0.4450 **
	(0.3253)	(0.4223)	(0.1961)	(0.3024)	(0.3675)	(0.2076)
West South Central	-0.0745	-0.0068	-0.2152	-0.6847 **	-0.2180	0.1784
	(0.2689)	(0.2705)	(0.1787)	(0.2863)	(0.2898)	(0.1589)
Mountain	0.1372	-0.6323	-0.2717	-0.5604 *	0.1535	-0.1482
	(0.3082)	(0.3955)	(0.1813)	(0.3369)	(0.3106)	(0.1740)
(Pacific omitted)						
Urban	-0.0804	0.3508	-0.0502	-0.1049	-0.1445	-0.2511 **
	(0.2077)	(0.2677)	(0.1291)	(0.1847)	(0.2023)	(0.1251)
(Rural omitted)						
Intercept	1.5179 **	6.6950 ***	0.5363	-2.7904 **	-6.6556 ***	-3.8164 ***
	(0.7384)	(0.9380)	(1.0032)	(1.1198)	(0.8655)	(0.9085)
(Pseudo) R-squared	0.0989	0.1115	0.0436	0.1335	0.0782	0.0594
N	2,611	2,616	14,693	2,624	2,629	14,744
Minus log-likelihood	1,486	968	4,902	990	936	3,056

N/A = not applicable

* Significant at 0.10 level
** Significant at 0.05 level
***Significant at 0.01 level.

SOURCE: Medicare Current Beneficiary Survey, Rounds 1, 4 and 7 Data. Medicare NCH Claims for MCBS Population. Primary analysis by the Center for Health Economics Research.

TABLE VIII-14

DETERMINANTS OF SELECTED UTILIZATION MEASURES IN THE MEDICARE POPULATION BY RACE
(Standard Errors in Parentheses)

	ANY PHYSICIAN VISIT		FACED BARRIERS TO CARE	
	Black	White	Black	White
Year				
1992	-0.0081	0.3980 ***	-0.1362	-0.2030 ***
	(0.1502)	(0.0624)	(0.1422)	(0.0662)
1993	0.1922	0.5100 ***	-0.1083	-0.3406 ***
	(0.1366)	(0.0448)	(0.1464)	(0.0707)
1991 (Omitted)				
Medicare Payment Change	-0.0054	-0.0085	0.0338 ***	-0.0024
	(0.0101)	(0.0056)	(0.0118)	(0.0097)
Interaction of Year*Medicare Payment Change				
1992	-0.0030	0.0033	-0.0326 *	0.0009
	(0.0142)	(0.0049)	(0.0183)	(0.0067)
1993	-0.0055	0.0015	0.0000	-0.0202 *
	(0.0131)	(0.0051)	(0.0119)	(0.0115)
1991 (Omitted)				
Age	-0.0260	-0.0253	0.0106	0.0638 ***
	(0.0288)	(0.0162)	(0.0273)	(0.0192)
Age-Squared	0.0003	0.0003 **	-0.0003	-0.0007 ***
	(0.0002)	(0.0001)	(0.0002)	(0.0002)
Sex				
Male	-0.5485 ***	-0.4421 ***	-0.0925	-0.4095 ***
	(0.1634)	(0.0575)	(0.2005)	(0.0766)
(Female omitted)				
Educational Status				
Less than 12 years	-0.1377	-0.4145 ***	-0.1394	0.1123
	(0.2201)	(0.0787)	(0.3241)	(0.1203)
12 years	-0.2606	-0.3377 ***	-0.4136	0.1146
	(0.2366)	(0.0844)	(0.4182)	(0.1105)
(More than 12 years omitted)				
Living Arrangement				
Living with spouse	0.1191	0.0062	-0.6616 **	-0.1526
	(0.2543)	(0.0928)	(0.2553)	(0.0925)
Living with other	-0.4908 ***	-0.1434	-0.0867	-0.0826
	(0.1842)	(0.0910)	(0.2138)	(0.1069)
(Living alone Omitted)				
Income Status				
Less than $10,000	-0.8162	-0.5754 ***	0.5024	0.3849 **
	(0.5874)	(0.1171)	(0.5895)	(0.1544)
$10,001 to $20,000	-0.6104	-0.3836 ***	0.7241	0.3092 **
	(0.6013)	(0.1319)	(0.5717)	(0.1453)
$20,001 to $35,000	-0.2977	-0.1236	-0.0738	0.1546
	(0.6062)	(0.1356)	(0.6650)	(0.1444)
(Greater than $35,000 omitted)				
Supplemental Coverage				
Medicaid	0.6878 ***	0.7821 ***	-0.7267 **	-0.5078 ***
	(0.2282)	(0.1823)	(0.2829)	(0.1455)
Private	0.8840 ***	1.1039 ***	-0.3220	-0.8318 ***
	(0.2367)	(0.1040)	(0.2704)	(0.0975)
Other or Combination	1.0642 ***	1.0284 ***	-0.5203	-0.6369 ***
	(0.2717)	(0.1519)	(0.3677)	(0.1414)
(No supplemental coverage omitted)				

TABLE VIII-14 (continued)

DETERMINANTS OF SELECTED UTILIZATION MEASURES IN THE MEDICARE POPULATION BY RACE
(Standard Errors in Parentheses)

	ANY PHYSICIAN VISIT		FACED BARRIERS TO CARE	
	Black	White	Black	White
Physicians Per Capita	-1.7942 ***	0.0419	0.1118	0.1888
	(0.5819)	(0.3296)	(0.8170)	(0.3408)
Perceived Health Status				
Very Good	0.4760 **	0.4308 ***	0.3946	0.3982 ***
	(0.2189)	(0.0580)	(0.5357)	(0.1303)
Good	1.0244 ***	0.9785 ***	1.0540 **	0.8390 ***
	(0.2069)	(0.0805)	(0.4107)	(0.1434)
Fair	1.2579 ***	1.1928 ***	1.5265 ***	1.1788 ***
	(0.1882)	(0.0862)	(0.4514)	(0.1626)
Poor	0.8266 ***	1.3617 ***	1.8563 ***	1.4677 ***
	(0.2415)	(0.1508)	(0.4629)	(0.1569)
(Excellent health status omitted)				
Level of Dependency				
IADL only	0.5323 ***	0.1504	0.3049	0.3110 **
	(0.1982)	(0.1116)	(0.2428)	(0.1405)
1-2 ADLs	0.5311 ***	0.2590 ***	0.7432 ***	0.8104 ***
	(0.1920)	(0.0709)	(0.1994)	(0.0896)
3-4 ADLs	0.9102 ***	0.5091 ***	1.0165 ***	0.9421 ***
	(0.2595)	(0.1229)	(0.2515)	(0.1301)
5-6 ADLs	0.7140 **	0.0108	1.2427 ***	0.9489 ***
	(0.3481)	(0.1921)	(0.2608)	(0.1945)
(No ADL/IADL omitted)				
Geographic Location				
New England	5.4464 ***	-0.0766	-3.4179 ***	-0.0649
	(0.4751)	(0.1391)	(0.5723)	(0.1662)
Middle Atlantic	1.0306 ***	-0.0159	0.0102	0.0307
	(0.3408)	(0.1218)	(0.3836)	(0.1408)
East North Central	0.5092	-0.0985	-0.5583	-0.0498
	(0.3235)	(0.0990)	(0.4709)	(0.1534)
West North Central	1.8486 ***	-0.0174	0.0773	-0.5480 ***
	(0.4771)	(0.1620)	(0.5032)	(0.1650)
South Atlantic	1.0042 ***	0.0907	-0.0914	0.1922
	(0.3409)	(0.1394)	(0.3864)	(0.1318)
East South Central	1.1590 ***	-0.3236 **	-0.6972	-0.3035 *
	(0.2973)	(0.1581)	(0.4716)	(0.1578)
West South Central	0.5343 *	-0.1753	-0.2869	0.0237
	(0.3120)	(0.1411)	(0.3984)	(0.1386)
Mountain	0.7997 ***	-0.2117 *	-0.5714	-0.0512
	(0.2824)	(0.1221)	(0.3792)	(0.1469)
(Pacific omitted)				
Urban	0.1521	-0.0271	0.2085	-0.2044
	(0.3407)	(0.1107)	(0.2812)	(0.1283)
(Rural omitted)				
Intercept	0.6668	1.0030 *	-2.7876 **	-3.5326 ***
	(1.0633)	(0.5174)	(1.1499)	(0.5567)
(Pseudo) R-squared	0.1186	0.0686	0.1028	0.0771
N	2,521	17,986	2,529	18,035
Minus log-likelihood	1,106	6,335	756	4,210

N/A = not applicable

* Significant at 0.10 level
** Significant at 0.05 level
***Significant at 0.01 level

NOTE: Beneficiaries of Hispanic origin and other ethnic origin are not included.

SOURCE: Medicare Current Beneficiary Survey, Rounds 1, 4 and 7 Data. Medicare NCH Claims for MCBS Population. Primary analyses by the Center for Health Economics Research.

Appendix IX

An Analysis of Utilization and Access from the National Health Interview Survey: 1984-92

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Appendix IX

An Analysis of Utilization and Access from the National Health Interview Survey: 1984-92

INTRODUCTION

Appendix IX presents information from the National Health Interview Survey (NHIS). The NHIS, an annual household survey of the noninstitutionalized U.S. population, collects health status, utilization, and socioeconomic information that can be used to understand and monitor trends in access to health care. Use of physician services can be analyzed by important variables such as insurance status, income, and health status, making the NHIS a valuable data source for evaluating the effects of physician payment reform on access. Because the NHIS collects information on persons of all ages, a comparison of the elderly with the non-elderly can be made. Such a comparison aids in determining whether changes are limited to the aged or reflect overall national trends.

Previous reports presented descriptive data for selected years during the period 1984 through 1991 on trends in the use of physician services by health status and sociodemographic categories, as well as a multivariate analysis of the trends in the use of physician services for the 1984, 1986, 1989, and 1990 time period. This appendix updates the prephysician payment reform descriptive data with information from the 1992 NHIS, the first year of the Medicare fee schedule (MFS). It also updates the multivariate analysis with data from the 1991 and 1992 NHIS. As more years of data become available, it is expected that the analyses in this appendix will be continued.

METHODS

Data from the NHIS conducted in 1984, 1986, and 1989-92 are used in this appendix because these years had supplemental questions on health insurance coverage. Approximately 41,000 households were interviewed in 1984; 25,000 households in 1986; 48,000 households in 1989; and 49,000 households in 1990-92. Data on health insurance status and income from the 1993 survey will be used in future reports as they become available.

In this analysis, physician use is examined by sociodemographic characteristics, health status, and geographic area. Use of physician services includes telephone contacts with a physician as well as contacts made in person; it does not include physician contacts while an overnight patient in the hospital. Because the vast majority (about 90 percent) of physician contacts are made in person, the term "visit" will be used rather than the term contact. (It should be noted that contacts in the NHIS also include visits to other than medical doctors).

The focus of the analysis is on several vulnerable segments of the Medicare population: persons with low income, Medicare enrollees without any supplemental health insurance, Medicare enrollees who also are entitled to Medicaid, persons in self-reported poor health, or persons with chronic conditions or with activity limitations, racial minorities; and persons residing in rural areas. Use rates by these vulnerable segments of the population are measured in several ways: the percent of persons with at least one physician visit in a year, the mean number of visits per person per year, and the proportion of physician visits in a year that occurred in physicians' offices. Comparisons of these utilization measures are made across population groups. The percent change in the use of physician services, as measured by the NHIS noninstitutionalized population, between 1984 and 1992 is presented. When the phrase "use of physician services" is used in the text, it refers to both the percent of persons with a visit and the mean visit rate.

For the descriptive data, unless otherwise noted, all estimates in this appendix have relative standard errors (the standard error divided by the estimate) of 15 percent or less. These relative standard errors were calculated using the SUDAAN software package. This software package accounts for the complex sampling design of the NHIS in deriving relative standard errors. Unless noted, the differences presented in the text are significant at the .05 level using the Z test.

To investigate the independent effects of particular variables on the use of physician services while controlling for possible covariates, a multivariate analysis of the 1984-92 data was conducted using a two-part model. The first part used logistic regression to explore the effect of a range of sociodemographic and health status variables on the probability of having at least one physician visit. The second part used ordinary least squares to explore the relation between the same independent variables and the number of visits per users for persons with at least one visit. To determine whether there was a trend in use of physician services, the stability of the regression coefficients over time was evaluated through pair-wise comparisons of individual coefficients from one year to the next. The null hypothesis is that for a particular variable the coefficient has not changed from one year to the next. If the difference between the coefficients for a particular variable is significant, then this suggests that the effect of that variable on physician use has increased or has decreased.

DESCRIPTIVE RESULTS

Percent Change in Physician Visit Rates, 1984-92

Throughout the 1984-92 time period, reported use of physician services was higher for persons 65 years of age or over than for persons 18 to 64 years of age (Table IX-1). Among the elderly, persons 75 of age or over used more physician services than did persons 65 to 74 years of age. For the elderly, an increase in the percent of persons with a visit was observed throughout the study period, with most of this increase occurring between 1986 and 1989. In 1984, 82 percent of the elderly had a physician visit; by 1992, 87 percent of the elderly had a physician visit. Since 1984, the mean visit rate also increased substantially for the elderly (29.1 percent), reaching 10.6

visits per person in 1992, and for the nonelderly (17.1 percent), reaching 5.7 visits per person. Much of the increase for the elderly occurred from 1990 to 1991. Since the percent of elderly with a visit remained constant from 1990 to 1991, the increase in the visit rate from 1990 to 1991 is attributable to an increase in use among users, particularly for the population 75 years of age or over. The visit rate for the elderly did not increase significantly during 1992, the first full year of the MFS.

Use of Physician Services and Health Status

As described previously (Health Care Financing Administration, 1992, 1993, and 1994), for all three health status measures (self-reported health status, activity limitation, and presence of a chronic condition), use of physician services was highest for persons reporting the poorest health (Table IX-2). In 1992, 81 percent of elderly persons in excellent/very good health had a physician visit compared with 93 percent of persons in fair/poor health. Similarly, the mean visit rate was 6.1 for elderly persons in excellent/very good health and 18.3 for elderly persons in fair/poor health.

In each of the study years and for both age groups, persons with the most severe activity limitation had a much higher mean visit rate than did those without a limitation. Among persons 65 years of age or over, the mean visit rate in 1992 was 26.9 visits per person for those unable to perform their major activity versus 6.8 visits per person for those without an activity limitation. Not surprising, the presence of at least one chronic condition was associated with higher use of physician services. An examination of the trends during the period 1984-92 for persons with the poorest health does not reveal any decline in the use of physician services with the implementation of the MFS in 1992.

Use of Physician Services and Sociodemographic Characteristics

Throughout 1984 to 1992, the mean visit rate for the population 65 years of age or over was highest for those with other public program coverage (primarily Medicaid) compared to those with Medicare and other coverage (e.g., Medigap policies), and those with Medicare only (Table IX-3). Among the aged, those with Medicare coverage only were the least likely to have at least one physician visit. In 1992 (and in each of the study years), for persons 18 to 64 years of age, the use of physician services was highest for those with public program coverage (13.7 visits per person) and lowest for the uninsured (3.6 visits per person).

Among the aged with Medicare and other coverage (primarily Medigap), the percent of persons with a visit significantly increased between 1984 and 1992. The same is true for the Medicare only group. Similarly, among the population 18 to 64 years of age with private insurance, the percent of persons with a visit also increased. The trend data show that the use of physician services by Medicare beneficiaries with other public coverage or with Medicare coverage only did not decline with the implementation of the MFS.

Throughout the period 1984-92, the mean visit rate was similar for the poor/low income group (persons with family income at 200 percent or less of the poverty level) and the not poor group for both the aged and the population 18 to 64 years of age, the percent of persons with a visit was only slightly higher for the not poor group

Except for the poor/low income group 18 to 64 years of age, the percent of persons with a visit significantly increased between 1984 and 1992 for both income groups and both age groups. Regardless of the age groups, the mean visit rate also increased throughout this time period for both income groups (the increase for the not poor aged population was significant at the .10 level)

For both black persons and white persons, the percent of persons with a visit increased between 1984 and 1992, regardless of age (Table IX-4). For both age groups, the mean visit rate increased between 1984 and 1992 for white persons, but did not increase for black persons. For white aged persons, the mean visit rate increased from 8.2 visits in 1984 to 10.6 visits in 1992. When all 6 years are combined (data not shown), the mean visit rate for black persons 65 years of age or over is higher (weighted average of 10.3 visits per person) than for white persons (weighted average of 9.1 visits per person). The percent of elderly persons with a visit, however, is similar (about 84-85 percent) by race.

Use of Physician Services by Activity Limitation and Sociodemographic Characteristics

As shown in Table IX-5, for both the population under 65 years of age and the elderly, persons insured under a public program were more likely to have an activity limitation than were those not covered by a public program. Similarly, for both age groups, the poor were more likely to have an activity limitation than were the not poor.

In 1992, 42.4 percent of the Medicare and other public coverage group reported no activity limitation. For 1989, the corresponding figure was only 37 percent (data not shown). This improvement in the health of the aged population with Medicare and other public coverage might reflect the introduction of the Qualified Medicare Beneficiary (QMB) program. Under the QMB program, the Medicaid program pays the Medicare premium and cost-sharing requirements for qualified persons. Medicare enrollees who qualify under the QMB program do so because their income is low (but not low enough to receive Supplemental Security Income) and not because of health status. They are more likely to be a healthier population than are the dual eligibles.

Across all activity limitation groups, there were persistent differences in the use of physician services by insurance status (Table IX-6). Regardless of activity limitation status, aged persons with Medicare coverage only were the least likely to have had a physician visit and had the lowest visit rate compared to Medicare enrollees with supplemental insurance. (However, for those who were unable to perform their major activity, the difference between the Medicare only group and the Medicare and other coverage group was not significant).

Across all activity limitation groups, the aged who were not poor were more likely to have at least one physician visit than were the poor/low-income aged. However, the visit rate for the poor/low-income group was similar to the visit rate for the not poor group for all activity limitation categories. Among the population 18 to 64 years of age who were unable to perform their major activity, the not poor group had significantly more visits than the poor/low income group (23.5 visits versus 17.9 visits).

Proportion of Physician Visits in Physicians' Offices

Slightly over half of all non-inpatient physician visits occurred in physicians' offices as opposed to other settings (Table IX-7), such as hospital outpatient departments and clinics, 8 percent, and emergency rooms, 3 percent (data not shown). For persons 65 years of age or over, the average proportion of visits in physicians' offices was highest for persons with Medicare and other coverage, primarily Medigap coverage (59.7 percent). For the population 18 to 64 years of age, persons most likely to obtain care in physicians' offices were those with private insurance (60.4 percent of visits). In contrast, the population 18 to 64 years of age with public coverage was the least likely to seek care in physicians' offices (44.1 percent of visits).

MULTIVARIATE RESULTS

The multivariate analysis was conducted for years 1984-92, but only 1992 data are shown in the tables of this appendix. The findings from the descriptive analysis for health status, income, and insurance were supported by the multivariate analysis.

Probability of Having a Physician Visit

The odds of having a physician visit are higher for females than for males (Table IX-8), especially for the 18 to 64 year old group. In 1992, females 18 to 64 years of age were 2.47 times more likely to have a visit than were males; females 65 years of age or over were 1.46 times more likely to have a visit than were males.

Prior to 1992 (data not shown), after controlling for other covariates, aged persons residing in metropolitan statistical areas (MSA) were more likely to have a physician visit than were persons residing in non-MSA areas. In 1992, the likelihood of a person 65 years of age or over having a visit was about the same for MSA and for non-MSA areas.

Education appears to have a significant influence on the likelihood of a person 18 to 64 years of age having a physician visit, with the odds of having a visit increasing with educational level. There is no specific pattern for the 65 years of age or over group.

Among the elderly, persons with supplemental insurance, regardless of whether it is Medicaid (odds ratio of 1.69 in 1992) or private Medigap insurance (odds ratio of 1.97 in 1992), are more

likely to visit a physician than are persons with only Medicare coverage. Likewise, persons 18 to 64 years of age with insurance, regardless of the source, are much more likely to have a physician visit than are the uninsured.

Level of Use of Physician Visits among Users

Throughout the time period 1984 to 1991 (data not shown), elderly females had between 4.7 percent and 8.9 percent more visits than had elderly males. In 1992, however, there was no difference between elderly males and females (Table IX-9). In 1992, females 18 to 64 years of age had 23 percent more visits than had males.

The logistic regression revealed that there is no significant difference between black and white persons 65 years of age or over in the likelihood of having a physician visit. Among users there also was no significant difference in the level of use between white and black persons 65 years of age or over. However, among users 18 to 64 years of age, black persons consistently (data not shown for 1984-1991) had about 12 percent fewer physician visits than had white persons.

In general, among users of physicians, the number of visits per person is higher for persons residing in MSA areas compared with persons residing in non-MSA areas. For example, persons 18 to 64 years of age in central cities used between 3 percent and 7 percent more visits. In 1992, persons 65 years of age or over residing in non-central city MSAs used 5 percent more visits than did non-MSA residents.

Among the elderly, persons with at least a college education had a higher visit rate than did elderly persons with only a high school education. In 1992, for example, elderly persons with a college degree had 9 percent more visits than did persons whose highest educational level was a high school diploma.

Aged persons with insurance supplemental to Medicare had more visits than aged persons with only Medicare coverage. The level of use was much higher for persons with Medicare and other public coverage. For example, in 1992, persons 65 years of age or over with Medicare and other public coverage had 24.1 percent more visits than did persons with only Medicare coverage, and persons with Medicare and other coverage had 12.1 percent more visits. In 1992, among persons 18 to 64 years of age, those with public coverage had 36 percent more visits than the uninsured; those with private coverage had 18 percent more visits than the uninsured.

Trends in the Use of Physician Services

Tests for trends in the multivariate analysis were done. Even though only 1992 data are shown in Tables IX-8 and IX-9, the tests for trends were conducted for all the study years, 1984-92. Only a few significant trends were found. This discussion will focus only on those variables that showed an increasing or a decreasing trend in the use of physician services. For the elderly, the

odds of persons living in non-central city MSAs having a visit (compared to elderly persons in non-MSAs) declined from 1 51 visits in 1984 to 1 07 visits in 1992 Similarly, in 1984, elderly persons living in central cities (relative to those in non-MSAs) had 13 percent more visits than had their non-MSA counterparts, but by 1992 there was no difference between the two groups

For the non-elderly, both persons in fair health and persons in poor health (relative to those in excellent health) had a significant decline in the odds of having a visit during the study period. For those in fair health, the odds of a visit declined from 2 01 visits in 1984 to 1.76 visits in 1992, for those in poor health, the odds of a visit declined from 3 7 visits in 1989 to 2.67 visits in 1992. The odds of a female 18 to 64 years of age having a visit (relative to males) increased during the study period from 2.1 visits in 1984 to 2 47 visits in 1992. The odds of persons 45 to 64 having a visit (relative to those 18 to 44 years of age) also increased during the study period. By 1992, there was no difference between persons 18 to 44 years of age and persons 45 to 64 years of age years of age in the odds of having a visit.

The visit rate among users for persons 18 to 64 years of age with either public coverage or private coverage increased relative to the uninsured during the study period. Those with private coverage had 8 percent more visits in 1984 than did the uninsured. By 1992, those with private coverage had 19 percent more visits.

DISCUSSION

Use of physician services increased between 1984 and 1992 for both the elderly, particularly for those 75 years of age or over, and the non-elderly. It is not clear whether this increase reflects improving access to physician services, more concern about health problems, or inappropriate utilization.

Both the descriptive results and the multivariate results confirm that perceived health status, activity limitation, and presence of a chronic condition are very important determinants of the use of physician services. While the descriptive findings showed an increase in the use of physician services across all health status and activity limitation groups in the pre-physician payment reform (PPR) period, when controlling for other covariates, no significant time trends for health status and activity limitation groups were identified during the study period. In the post-PPR period, it will be important to continue monitoring the trend in the use of physician services within health status categories, particularly for persons with the poorest health.

The multivariate analyses in this appendix suggest some geographic trends for the elderly. While there were differences in the use of physician services between non-MSA and MSA areas during the early years, by 1992, many of these differences had diminished. Future analyses will address whether this time trend represents increasing use among the non-MSA population or declining use among the MSA population. It will be important to continue monitoring this trend.

Insurance coverage is also a very important determinant of the use of physician services since insurance reduces the financial barriers to receiving care. In general, the insured use more physician services than do the uninsured. Supplemental insurance coverage further reduces financial barriers to receiving care. The elderly who lack supplemental insurance use fewer physician services than do those with the coverage. Additionally, the Medicare and other public coverage group contains many medically needy persons who are quite sick and who are expected to require more services. These two groups, therefore, may be more vulnerable to potential access problems. It will be important to continue monitoring the use of physician services by persons with only Medicare coverage and persons with Medicare and other public coverage.

In summary, the analysis of the NHIS data for 1984 through 1992 showed that prior to PPR, health insurance and health status were important determinants of the use of physician services. PPR may affect health insurance determinants (by limitations on extra billing) as well as income (by affecting patients' out-of-pocket liability for physician services). Future analyses using the NHIS should help to identify the impact of PPR on access for vulnerable segments of the Medicare population.

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Table IX-1

Percent of persons with at least one physician visit and mean number of visits per person, by age
1984, 1986, 1989, 1990, 1991, and 1992

Age	Percent distribution of persons (1)	Percent with a visit						Mean number of visits per person						Percent change 1984-92 in	
														Percent with a visit	Mean number of visits per person
	1992	1984	1986	1989	1990	1991	1992	1984	1986	1989	1990	1991	1992		
65 years and over	100.0	82	83	85	86	86	87	8.2	9.1	8.9	9.2	10.4	10.6	5.9	29.1
65-74 years	60.0	81	81	84	84	85	85	7.7	8.1	8.2	8.5	9.2	9.7	5.0	25.3
75 and over	40.0	84	85	88	88	88	89	9.1	10.6	9.9	10.1	12.3	12.1	7.1	33.0
18-64 years	100.0	70	71	72	73	73	72	4.9	5.2	5.2	5.4	5.4	5.7	3.0	17.1

(1) Distribution for the 65 and over population based on 30.8 million persons, distribution for the 18-64 year old population based on 154.2 million persons.

SOURCE: National Health Interview Survey, National Center for Health Statistics.

Table IX-2

Percent of persons with at least one physician visit and mean number of visits per person, by selected health status measures, and age: 1984, 1986, 1989, 1990, 1991, and 1992.

Health status and age	Percent distribution of persons (2) 1992	Percent with a physician visit						Mean number of visits per person					
		1984	1986	1989	1990	1991	1992	1984	1986	1989	1990	1991	1992
Self-reported health status													
65 years and over (1)	100.0	82	83	85	86	86	87	8.2	9.1	8.9	9.2	10.4	10.6
Excellent/Very Good	38.1	75	75	80	80	81	81	5.4	5.6	5.5	5.5	6.1	6.1
Good	33.0	82	84	86	87	87	88	6.8	7.6	7.7	8.4	8.9	9.2
Fair/Poor	28.6	90	91	92	92	92	93	12.9	14.8	14.7	15.4	17.9	18.3
18-64 years (1)	100.0	70	71	72	73	73	72	4.9	5.2	5.2	5.4	5.4	5.7
Excellent/Very Good	66.4	67	68	70	70	70	70	3.4	3.7	3.7	3.6	3.7	3.8
Good	23.3	73	74	75	76	76	75	5.6	5.6	6.0	6.7	6.3	6.6
Fair/Poor	10.0	85	85	87	87	87	86	12.5	14.8	14.4	15.3	15.1	16.6
Activity limitation													
65 years and over	100.0	82	83	85	86	86	87	8.2	9.1	8.9	9.2	10.4	10.6
Not limited	61.2	77	77	81	81	82	82	5.5	6.0	5.9	5.9	6.5	6.8
Limited	28.1	89	91	92	92	92	94	10.3	11.0	11.6	11.7	13.0	12.9
Unable to perform major activ	10.6	93	92	95	94	94	94	18.3	21.6	19.5	22.3	26.8	26.9
18-64 years	100.0	70	71	72	73	73	72	4.9	5.2	5.2	5.4	5.4	5.7
Not limited	85.9	68	69	70	70	71	70	3.8	4.0	4.0	4.0	3.9	4.1
Limited	9.0	85	86	86	88	88	87	9.8	10.1	9.9	10.9	11.1	11.4
Unable to perform major activ	5.1	90	90	91	92	91	92	17.3	20.3	20.0	21.5	22.4	23.5
Presence of at least one chronic conditon													
65 years and over	100.0	82	83	85	86	86	87	8.2	9.1	8.9	9.2	10.4	10.6
Yes	67.2	89	89	91	91	92	93	11.5	12.6	12.3	11.9	14.5	14.5
No	32.8	68	69	74	72	75	74	1.7	2.0	2.3	2.3	2.4	2.7
18-64 years	100.0	70	71	72	73	73	72	4.9	5.2	5.2	5.4	5.4	5.7
Yes	36.5	84	84	85	85	86	85	10.1	10.7	10.9	10.6	11.3	11.7
No	63.5	63	64	65	66	66	65	2.2	2.2	2.2	2.2	2.1	2.3

(1) Total includes persons with unknown health status.

(2) Distribution for the 65 and over population based on 30.8 million persons; distribution for the 18-64 year old population based on 154.2 million persons.

SOURCE: National Health Interview Survey, National Center for Health Statistics.

Table IX-3

Percent of persons with a physician visit and mean number of visits per person, by selected sociodemographic characteristics: 1984, 1986, 1989, and 1990

Sociodemographic characteristics	Percent distribution of persons	Percent with a physician visit						Mean number of visits per person					
	1992	1984	1986	1989	1990	1991	1992	1984	1986	1989	1990	1991	1992
Health Insurance status													
65 years and over (1)	100.0	82	83	85	86	86	87	8.2	9.1	8.9	9.2	10.4	10.6
Medicare only	14.6	76	73	79	78	79	81	7.6	8.3	7.5	8.1	8.7	9.5
Medicare and other public program	7.3	89	86	90	88	89	90	11.9	14.0	13.1	14.1	17.1	17.6
Medicare and other coverage	69.1	84	85	87	87	87	89	8.3	8.9	8.8	8.9	10.2	10.3
18-64 years (2)	100.0	70	71	72	73	73	72	4.9	5.2	5.2	5.4	5.4	5.7
Public program	7.0	84	83	85	85	83	85	10.1	11.9	11.1	11.1	11.2	13.7
Insured but not public program	69.9	72	73	75	75	75	76	4.7	5.0	5.1	5.2	5.2	5.5
Uninsured	18.2	57	57	57	60	60	57	3.7	3.6	3.2	4.0	3.7	3.6
Income Level													
65 years and over	100.0	82	83	85	86	86	87	8.2	9.1	8.9	9.2	10.4	10.6
Poor/Low income	44.1	81	81	84	84	84	85	8.4	9.3	9.1	9.7	10.9	11.1
Not poor	55.9	82	84	86	87	87	88	8.1	8.9	8.7	8.8	10.1	10.2
18-64 years	100.0	70	71	72	73	73	72	4.9	5.2	5.2	5.4	5.4	5.7
Poor/Low income	31.8	67	68	69	70	70	68	5.1	5.7	5.4	5.9	5.7	6.3
Not poor	68.2	72	72	73	74	74	74	4.8	5.0	5.1	5.2	5.2	5.5

(1) Includes persons with insurance other than Medicare and unknown insurance.

(2) Includes persons with unknown insurance.

SOURCE: National Health Interview Survey, National Center for Health Statistics.

Table IX-4

Percent of persons with at least one physician visit and mean number of visits per person, by race
1984, 1986, 1989, 1990, 1991, and 1992

	Percent distribution of persons (2)	Percent with a physician visit						Mean number of visits per person					
	1992	1984	1986	1989	1990	1991	1992	1984	1986	1989	1990	1991	1992
65 years and over (1)	100.0	82	83	85	86	86	87	8.2	9.1	8.9	9.2	10.4	10.6
White	89.4	82	83	85	86	86	87	8.2	9.1	8.7	9.1	10.5	10.6
65-74 years of age	53.2	81	81	84	85	85	85	7.6	8.1	8.0	8.5	9.4	9.6
75 years of age and over	36.2	84	86	88	88	88	90	9.0	10.8	9.7	10.1	12.1	12.0
Black	8.5	82	81	85	84	86	85	9.8	9.1	11.0	9.7	10.4	12.0
65-74 years of age	5.3	81	81	84	82	83	83	8.8	8.9	10.0	9.2	7.3	11.0
75 years of age and over (3)	3.2	82	83	86	87	91	89	11.4	9.2	12.7	10.4	15.7	13.8
18-64 years (1)	100.0	70	71	72	73	73	72	4.9	5.2	5.2	5.4	5.4	5.7
White	83.7	71	72	73	73	74	73	5.0	5.3	5.3	5.4	5.5	5.8
Black	11.9	70	69	72	72	73	72	4.8	5.2	4.7	5.2	5.1	6.2

(1) Total includes persons with race listed as "other."

(2) Distribution for the 65 and over population is based on 30.8 million persons; distribution for the 18-64 year old population is based on 154.2 million persons.

(3) Relative standard errors for mean number of visits in 1984 and 1986 > 15% but <20%.

SOURCE: National Health Interview Survey, National Center for Health Statistics.

Table IX-5

Distribution of persons by selected sociodemographic characteristics and activity limitation status: 1992

Sociodemographic characteristics	Number of persons (in millions)	Percent Distribution			
		Total	Unable to to perform major activity	Limited	Not limited
Health insurance status					
65 years and over (1)	30.8	100.0	10.6	28.1	61.2
Medicare only	4.5	100.0	15.1	28.4	56.5
Medicare and other public program	2.2	100.0	24.1	33.5	42.4
Medicare and other coverage	21.3	100.0	8.0	28.6	63.4
18-64 years (2)	154.2	100.0	5.1	9.0	85.9
Public program	10.8	100.0	32.2	16.3	51.5
Insured but not public program	107.8	100.0	2.3	8.4	89.3
Uninsured	28.1	100.0	5.2	9.2	85.6
Income level					
65 years and over	30.8	100.0	10.6	28.1	61.2
Poor/Low income	13.6	100.0	13.7	31.3	54.9
Not poor	17.2	100.0	8.2	25.6	66.2
18-64 years	154.2	100.0	5.1	9.0	85.9
Poor/Low income	49.0	100.0	10.0	10.9	79.1
Not poor	105.2	100.0	2.8	8.2	89.1

(1) Includes persons with insurance other than Medicare and unknown insurance.

(2) Includes persons with unknown insurance.

SOURCE: National Health Interview Survey, National Center for Health Statistics.

Table IX-6

Percent of persons with a physician visit and mean number of visits per person, by selected sociodemographic characteristics and activity limitation: weighted average of 1984, 1986, 1989, 1990, 1991, and 1992

Sociodemographic characteristics	Unable to perform major activity		Limited		Not Limited	
	Percent with a physician visit	Mean number of visits	Percent with a physician visit	Mean number of visits	Percent with a physician visit	Mean number of visits
Health insurance status						
65 years and over (1)	94	21.5	92	11.7	80	6.0
Medicare only	91	19.1	87	9.2	71	4.6
Medicare and other public program	95	25.9	92	13.4	83	8.0
Medicare and other coverage	95	21.8	94	12.0	83	6.3
18-64 years (2)	91	20.3	87	10.5	70	3.9
Public program	92	18.9	90	13.3	78	6.1
Insured but not public program	94	23.8	89	10.6	73	4.2
Uninsured	84	16.0	77	7.8	54	2.5
Income level						
65 years and over	94	21.5	92	11.7	80	6.0
Poor/Low income	93	20.9	91	11.4	77	5.8
Not poor	95	22.2	94	11.9	82	6.2
18-64 years	91	20.3	87	10.5	70	3.9
Poor/Low income	90	17.9	84	10.0	64	3.6
Not poor	94	23.5	88	10.9	71	4.1

(1) Includes persons with insurance other than Medicare and unknown insurance.

(2) Includes persons with unknown insurance.

SOURCE: National Health Interview Survey, National Center for Health Statistics.

Table IX-7

Proportion of physician visits in physicians' offices by insurance category: 1984-92

Insurance category and age	Year						Average (3)
	1984	1986	1989	1990	1991	1992	1984-1992
Total	56.6	54.7	58.2	58.9	57.4	54.4	56.9
65 years and over (1)	57.2	53.7	59.2	58.5	56.4	52.7	56.7
Medicare only	52.7	39.5	55.8	57.0	48.2	47.7	50.5
Medicare & other public program	46.3	39.9	58.2	51.0	42.2	37.4	46.4
Medicare & other	59.9	59.3	61.1	59.8	60.7	57.1	59.7
18-64 years (2)	56.5	55.0	57.8	59.1	57.8	55.0	57.0
Public program	43.5	41.5	45.3	45.8	45.2	43.0	44.1
Insured but not public program	59.6	58.4	61.4	62.3	60.8	59.4	60.4
Uninsured	50.4	48.6	50.8	53.5	54.3	46.2	51.2

(1) Includes persons with insurance other than Medicare and unknown insurance.

(2) Includes persons with unknown insurance.

(3) Weighted proportional to the inverse variance.

SOURCE: National Health Interview Survey, National Center for Health Statistics.

Table IX-8

Risk (odds ratios) of having a physician visit for selected variables by age: 1992

Independent Variables	1992	
	18-64 yrs of age	65 + yrs of age
Intercept	0.43 *	0.69 *
Income to poverty ratio	1.06 *	1.11 *
Sex (0 = male, 1 = female)	2.47 *	1.46 *
Race (a)		
Black	1.05	1.10
Other	0.74 *	1.04
Self-reported health status (b)		
Very good	1.30 *	1.41 *
Good	1.39 *	1.74 *
Fair	1.76 *	2.43 *
Poor	2.67 *	2.91 *
Activity limitation (c)		
Unable to perform major activity	2.05 *	1.33 *
Limited in kind/amount of major activity	1.43 *	1.16
Limited in other activity	1.34 *	1.29 *
Presence of chronic condition (no = 0; yes = 1)	2.27 *	3.12 *
Geographic area of residence (d)		
MSA - central city	1.06	1.05
MSA - not central city	1.09 *	1.07
Highest educational level (e)		
0-11 years	0.80 *	0.84 *
1-3 years college	1.26 *	1.08
College graduate or more	1.40 *	1.27 *
Age division (f)	0.97	1.43 *
Insurance (g)		
Medicare and other public coverage	NA	1.69 *
Medicare and other coverage	NA	1.97 *
Other than Medicare	NA	1.48 *
Public coverage	2.58 *	NA
Private coverage	2.11 *	NA

(a) Reference group: White

(b) Reference group: Excellent health status

(c) Reference group: Not limited

(d) Reference group: Non-MSA area

(e) Reference group: High school diploma

(f) Age division for 18-64 year olds: 18-44 = 0, 45-64 = 1. Age division 65 and over group: 65-70 = 0, 75 and over1

(g) Reference group. Medicare only for over 65 model. Uninsured for 18-64 year old model

* Coefficient corresponding to odds ratio significant at $p <= .05$.

NOTE. MSA is metropolitan statistical area.

SOURCE. National Health Interview Survey, National Center for Health Statistics.

Table IX-9

Coefficients for use of physician visits among users for selected variables by age: 1992

	1992	
	18-64 yrs of age	65 + yrs of age
Independent Variables		
Intercept	0.274 *	0.407 *
Income to poverty ratio	0.004	0.023 *
Sex (0 = male, 1 = female)	0.232 *	0.032
Race (a)		
Black	-0.125 *	0.025
Other	-0.123 *	0.019
Self-reported health status (b)		
Very good	0.154 *	0.187 *
Good	0.333 *	0.293 *
Fair	0.568 *	0.552 *
Poor	0.944 *	0.840 *
Activity limitation (c)		
Unable to perform major activity	0.475	0.311 *
Limited in kind/amount of major activity	0.301 *	0.255 *
Limited in other activity	0.183 *	0.111 *
Presence of chronic condition (no = 0; yes = 1)	0.374 *	0.367 *
Geographic area of residence (d)		
MSA - central city	0.047 *	0.014
MSA - not central city	0.046 *	0.052 *
Highest educational level (e)		
0-11 years	-0.043 *	-0.002
1-3 years college	0.052 *	0.055 *
College graduate or more	0.092 *	0.094 *
Age division (f)	-0.107 *	0.055 *
Insurance (g)		
Medicare and other public coverage	NA	0.241 *
Medicare and other coverage	NA	0.121 *
Other than Medicare	NA	0.020
Public coverage	0.360 *	NA
Private coverage	0.180 *	NA

(a) Reference group: White

(b) Reference group: Excellent health status

(c) Reference group: Not limited

(d) Reference group: Non-MSA area

(e) Reference group: High school diploma

(f) Age division for 18-64 year olds: 18-44 = 0, 45-64 = 1. Age division 65 and over group: 65-70 = 0, 75 and over = 1

(g) Reference group: Medicare only for over 65 model. Uninsured for 18-64 year old model

* Coefficient corresponding to odds ratio significant at $p <= .05$.

NOTE: MSA is metropolitan statistical area.

SOURCE: National Health Interview Survey, National Center for Health Statistics.

Appendix X

Trends in Physician Supply

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Appendix X

Trends in Physician Supply

INTRODUCTION

Appendix X updates the baseline physician supply trend data presented in the 1994 report to Congress on access. This material extends the prior data through January 1993, showing changes in physician supply during the first year of the Medicare Fee Schedule (MFS).

Monitoring physician supply can be a significant factor in evaluating potential access to care. However, the impacts of physician payment reform on physician supply are likely to occur over a long time period. Service delivery patterns (e.g., physician visit rates) are expected to be more sensitive indicators of access in the short-term. Thus, these should be viewed only as an initial step toward monitoring physician supply response to the MFS.

As in the 1994 report to Congress on access, physician-to-population ratios are used as the primary measure of physician supply. Ratios of medical specialists, surgical specialists, and total physicians per 100,000 Medicare beneficiaries are described in terms of average annual rates of change for the years 1984 through 1992 and for the most recent 1992-93 period.[1] Data are presented comparing census regions, metropolitan/nonmetropolitan groups,[2] and Ex Ante impact areas[3] to facilitate comparability with previous findings. In addition, ratios of medical-to-surgical specialists are used to measure the mix of these physician types.

METHODS AND DATA

Measures

Methods and data sources remain unchanged from those previously reported in the 1994 report to Congress. Physician-to-population ratios were calculated using summary counts of doctors of

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[1] For ease of reference, the physician group "primary care and medical specialists" will be referred to as "medical specialists." "Surgical specialists" will be referred to as "surgeons."

[2] The method for classifying metropolitan/non-metropolitan areas is based on the 1990 census classifications. In contrast, the method used in the 1994 report to Congress on access was based upon different 1980 census classifications of urbanicity. The change in classifications has a generalized effect of increasing the number of beneficiaries in metropolitan areas, thus decreasing physician-to-population ratios for these areas.

[3] Ex Ante impact areas were defined in terms of State groupings based on the estimated impact of overall physician payment reform as published in the November 25, 1991, *Federal Register* 56.227. States were grouped according to the overall estimated change in Medicare physician payments by the year 1996, as follows: "increase" (+4 percent to +12 percent); "no change" (+3 percent to -3 percent); "moderate decrease" (-4 percent to -9 percent); and 4) "large decrease" (-10 percent to -20 percent).

medicine (MDs),[4] from the Health Resources and Services Administration's Area Resource File (ARF); Medicare beneficiary (denominator) data were derived from the Health Care Financing Administration (HCFA) Denominator File

Physician data represent estimates as of January 1 of each respective year. Physician specialties used in the construction of the ratios are listed in Table X-1 according to primary care and medical, and surgical specialist categories. Surgical specialties were defined according to the corresponding surgical services appearing in the December 2, 1993 *Federal Register* and remain unchanged from those used in the 1994 report to Congress on access. The primary care and medical specialties exclude physicians who are unlikely to render care to Medicare beneficiaries.[5]

The denominators were based on counts of total Medicare beneficiaries eligible for (Part B) physician services, including the aged, disabled, and end stage renal disease (ESRD) categories.[6] Partial-year eligibility was taken into account by computing person-months of eligibility, and then by annualizing these data.

RESULTS

Table X-2 presents the numbers of total physicians, medical specialists, and surgical specialists for the period 1984-93. In 1984, there were 2.04 medical specialists for every surgeon practicing in the United States. These data show the growth in the concentration of medical specialists relative to surgeons during the first year of the MFS implementation from 2.27 in January 1992 to 2.32 in January 1993. This growth is consistent with prior years' trends.

Table X-3 contains physician-to-population trend data for total numbers of medical and surgical specialists. Overall, this ratio decreased slightly by 0.47 percent during 1992, the first year of the MFS. This decline is very likely coincidental. In previous years, there had been a steady annual upward trend in the total physician-to-population ratios from 1,249 physicians per 100,000

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[4] Doctors of osteopathy were not included because of a lack of consistent data on these providers. Federal physicians such as those serving in the National Health Service Corps (NHSC), were not included because of data limitations. These exclusions may result in understating physician availability, particularly in rural areas served by NHSC physicians. Physician availability, too, may be understated for areas with relatively large proportions of doctors of osteopathy. Conversely, physicians employed by health maintenance organizations (HMOs) could not be excluded because county-level data were lacking. Similarly, it was not possible to exclude physicians who do not accept Medicare patients. These factors would tend to overstate physician availability for Medicare patients affected by the fee schedule.

[5] These specialties were excluded from the ratio calculation: pediatrics, pediatric allergy, pediatric cardiology, aerospace medicine, child psychiatry, forensic pathology, general preventive medicine, public health, other specialties (not listed), and unspecified specialty.

[6] Medicare HMO enrollees were included in the counts of beneficiaries because it was not possible to exclude HMO physicians in the construction of the numerator.

Medicare beneficiaries in 1984 to 1,370 physicians per 100,000 Medicare beneficiaries in 1992 for an average annual increase of 1.15 percent. As noted in the 1994 report to Congress, the year prior to the implementation of the MFS (January 1991-January 1992) showed an increase of 1.33 percent (not shown in Table X-3). That exceeded the average annual increase for prior years.

The greatest decline in physician supply from 1992 to 1993 (Table X-3) occurred in the West region where there was a decrease of 1.46 percent, followed by the South where the decrease was 1.07 percent. The Northeast and Midwest regions had moderate increases, which were less than the average annual changes for the previous baseline period. As noted in the 1994 report, the number of physicians per 100,000 Medicare beneficiaries in the Northeast and West census regions was much higher than the rest of the Nation. In January 1993 (Table X-3), the physician-to-population ratios in the Northeast and West regions (1,633 and 1,566, respectively) were about 33 percent greater, on average, than were the corresponding ratios in the Midwest and South regions (1,194 and 1,209, respectively). Average annual rates of growth from 1984 through 1992 were the highest in the Northeast region (1.90 percent). The rate of growth in the Northeast region fell to 0.33 percent between 1992 and 1993.

Based on the 1990 census classifications, metropolitan areas showed increasingly higher concentrations of physicians per 100,000 Medicare beneficiaries than did the nonmetropolitan areas, throughout the 9-year period. In 1984 there were 2.79 physicians per 100,000 Medicare beneficiaries in metropolitan areas for every one physician in nonmetropolitan areas. This comparative ratio increased steadily to 3.03 in 1993 (not shown in Table X-3.)

By 1993, there were 1,629 physicians per 100,000 Medicare beneficiaries in metropolitan areas compared with 538 in nonmetropolitan areas. Large core metropolitan areas had a ratio of 1,940 physicians per 100,000 Medicare beneficiaries by the beginning of 1993, more than eight-times the concentration of physicians in thinly populated areas. In thinly populated areas, adjacent and nonadjacent to metropolitan areas, the ratios were 232 and 240, respectively.

During the first year of the MFS, the metropolitan area physician supply ratio decreased by 0.52 percent; nonmetropolitan areas declined by 0.98 percent. During the prior 8 years, metropolitan and nonmetropolitan areas had been increasing at average annual rates of 1.20 percent and 0.21 percent, respectively.

Large metropolitan core areas for which ratios had been increasing by an average annual rate of 1.49 percent during the 1984-92 period also decreased in the 1992-93 period (0.49 percent). The most rural, thinly populated areas, both adjacent and nonadjacent to metropolitan areas, experienced the greatest declines from 1992-93, decreasing by 2.36 percent and 2.60 percent, respectively. However, yearly declines in the physician-to-population ratio had been occurring in most nonmetropolitan areas since 1989.

The "Large Decrease" Ex Ante impact group experienced a decline of 1.69 percent from 1992 to 1993, contrasted with a 0.74 average annual increase during the prior years. The group

comprised of the "No Change" in payment areas experienced the greatest annual increase in physicians per 100,000 Medicare beneficiaries (1 54 percent) from 1984 to 1992, with a smaller increase (0 37 percent) occurring from 1992 to 1993

Surgical specialists per 100,000 Medicare beneficiaries are shown in Table X-4 During the 1992-93 MFS year surgeons declined by 2.03 percent compared with a small annual growth rate of 0 26 percent for the prior eight years. The decline in this ratio was not due to an absolute decline in surgeons. Rather, it was caused by a more rapid increase in beneficiaries than in surgeons between these 2 years. In absolute terms, surgeons increased slightly by 0.31 percent, whereas, beneficiaries increased by 2.37 percent during this period.

As shown in Table X-4, the average annual change in surgeon-to-population ratios was small from 1984 through 1992, increasing from 411 to 419 surgeons per 100,000 Medicare beneficiaries, for an average annual increase of slightly more than one-quarter of a percent. The largest increases occurred during the middle of the period when this ratio increased from 409 surgeons per 100,000 Medicare beneficiaries in 1987 to 418 surgeons per 100,000 Medicare beneficiaries in 1989 for an annual growth rate of 1.0 percent for that period.

Concentrations of surgeons in the Northeast and West regions exceeded the rest of the country throughout the entire study period by approximately 25 percent. From 1984 to 1992 the rates of change in surgeons per 100,000 Medicare beneficiaries varied from an increase of 0.76 percent in the Northeast to a decrease of 0.30 percent in the West region during the 1984-92 period. All regions decreased from 1992 to 1993, with rates of decrease ranging from 2.62 percent in the West region to 1.30 percent in the Midwest region.

Substantial geographic differences are apparent between the metropolitan and nonmetropolitan areas for surgeons; the metropolitan areas had consistently maintained over three times as many surgeons per 100,000 Medicare beneficiaries throughout the 1984-93 period. The 1993 ratio for metropolitan area surgeons was 495 per 100,000 Medicare beneficiaries compared with the ratio for nonmetropolitan area surgeons of 151 per 100,000 Medicare beneficiaries. However, metropolitan and nonmetropolitan ratios both dropped during the 1992-93 period by 2.14 percent and 1.88 percent, respectively. These ratio declines were both associated with slower increases in the absolute numbers of surgeons when compared to the increases the number of beneficiaries, as shown for the overall surgeon ratio decline. The ratio for surgeons was very high in the large core metropolitan areas in 1993 (584 per 100,000 Medicare beneficiaries). In contrast, thinly populated areas, adjacent and nonadjacent to metropolitan areas, showed ratios of 29 and 33 surgeons per 100,000 Medicare beneficiaries.

Table X-5 contains data on the medical specialists per 100,000 Medicare beneficiaries for the 1984-93 study period. During the years 1984-92 medical specialist-to-population ratios rose at a relatively high average annual growth rate of 1.58 percent. From 1992 to 1993 the growth rate was 0.21 percent. In 1993, the ratio for the United States was 952 per 100,000 Medicare beneficiaries.

As shown for surgeon supply ratios, there was a higher ratio for medical specialists in the Northeast and West regions, compared with medical specialists in the Midwest and South regions The size of this differential, however, was significantly larger for medical specialist ratios In 1993, the combined Northeast and West census regions had about 33 percent more medical specialists per 100,000 Medicare beneficiaries than did the rest of the country

The highest average annual rate of change during the 1984-92 period occurred in the Northeast (2.40 percent). During the 1992-93 period this ratio increased at a lower rate of 1.20 percent. The West region had the lowest growth rate (0.67 percent) from 1984-1992 and had the largest decline (0.95 percent) from 1992-93.

The ratio of medical specialists per 100,000 Medicare beneficiaries was considerably higher in metropolitan areas than in nonmetropolitan areas. Supply differences between the metropolitan and nonmetropolitan areas were found to be generally lower than those for surgeons, but were steadily increasing throughout the 9-year period. Metropolitan-to-nonmetropolitan supply ratios increased from 2.61 in 1984 to 2.93 in 1993. In 1984, metropolitan medical specialists per 100,000 Medicare beneficiaries was 992 and 380 for nonmetropolitan medical specialists or 161 percent greater. In 1993, there were 1,135 medical specialists per 100,000 in metropolitan areas compared with 387 medical specialists per 100,000 Medicare specialists in nonmetropolitan areas.

DISCUSSION

The overall supply of physicians in the United States increased at a slow but steady pace during the period from 1984-92, as measured by physician-to-Medicare population ratios. Total physicians per 100,000 Medicare beneficiaries rose from 1,249 in 1984 to 1,370 in 1992. The ratio for medical specialists increased more than the overall growth rate, while the ratio for surgical specialists showed a nominal growth rate. The surgeon-to-population ratio dropped during 1992 whereas medical specialists increased only slightly during this year. However, neither of these deviations from the prior trend line were due to absolute decreases in supply.

For every two physicians in a medical specialty in the United States during 1984-93, there was approximately one physician in a surgical specialty. In 1984, the ratio of medical-to-surgical specialists was 2.04; this ratio increased to 2.27 in 1992, reflecting an overall positive trend in the supply of medical specialists relative to surgeons for the 8-year period. A similar small increase in the ratio of medical-to-surgical specialists occurred between 1992 and 1993, suggesting that there had been no discernable influence of the MFS payment legislation on the mix of physicians.

Large differences in the geographic supply of physicians existed throughout the study period, with the Northeast and West regions showing much higher concentrations of physicians relative to the number of Medicare beneficiaries compared with the rest of the country. Not only was the ratio of physicians-to-Medicare beneficiaries highest in the Northeast region, this ratio rose at a faster rate than the national average between 1984 and 1992, but lessened to a lower rate from 1992-93. As reported in the 1994 report to Congress on access, the high ratios for the West region may

understate beneficiary access (compared with those for the Northeast region) because of large variations in the geographic dispersion of both physicians and beneficiaries in the West region

Similarly, significant differences in supply were found between urban and rural areas with metropolitan areas possessing much greater concentrations of physicians than nonmetropolitan areas, based on the 1990 census classifications. The lowest ratios occurred in thinly populated areas, particularly for surgeons. In addition, metropolitan area physicians per 100,000 Medicare beneficiaries increased modestly throughout the 1984-92 period but decreased somewhat during 1992. In contrast, the ratios for nonmetropolitan physicians showed much slower growth during the 1984-92 comparison period and fell sharply from 1992 to 1993.

The ratios of medical specialists per 100,000 Medicare beneficiaries were much larger than those for surgeons. The greatest differences between medical specialists and surgeons per 100,000 Medicare beneficiaries were in rural areas. In 1993, thinly populated areas adjacent to metropolitan areas had 203 medical specialists per 100,000 Medicare beneficiaries compared with 29 surgeons per 100,000 beneficiaries, i.e., for every surgeon practicing in these areas there were about seven medical specialists. In contrast, large core metropolitan areas had 1,356 medical specialists and 584 surgeons per 100,000 Medicare beneficiaries or between 2 to 3 medical specialists per surgeon.

Surgeons per 100,000 Medicare beneficiaries in metropolitan areas consistently exceeded those in nonmetropolitan areas throughout the 1984-93 period. Differences between metropolitan and nonmetropolitan areas in the supply of medical specialists were less than the differences for surgeons, but rose consistently throughout the period. In 1984, metropolitan medical specialists exceeded their nonmetropolitan counterparts by 161 percent. This difference rose to 191 percent in 1991 and 193 percent in 1993, continuing the trend seen in the prior 8 years.

As observed in the 1994 report to Congress on access, physician-to-population ratios can be viewed as an indirect or "potential" access measure. Any possible influence of physician payment reform on physician supply is likely to occur over the long-term. As the MFS continues, it will be important to monitor physician-to-population ratios, particularly for rural areas.

Table X-1
Specialties Used in Physician-to-Medicare Population Ratio Calculations

Medical	Surgical
Allergy	Colon/Rectal Surgery
Anesthesiology	Dermatology
Cardiovascular Disease	General Surgery
Diagnostic Radiology	Neurological Surgery
Emergency Medicine	Obstetrics-Gynecology
Family Practice	Ophthalmology
Gastroenterology	Orthopedic Surgery
General Practice	Otolaryngology
Internal Medicine	Plastic Surgery
Neurology	Thoracic Surgery
Nuclear Medicine	Urology
Occupational Medicine	
Pathology	
Physical Medicine and Rehabilitation	
Psychiatry	
Pulmonary Disease	
Radiology	
Therapeutic Radiology	

NOTES: Surgical specialties are based on those specialties considered "surgical" in the December 2, 1993, *Federal Register* 58:230. Some of the surgical specialties referenced in this *Federal Register* were not included in the above list because they were either limited license (non-MD) practitioners or could not be identified in the Area Resource File. These include oral surgeons, podiatrists, hand surgeons, and multispecialty clinics.

Otorhinolaryngologists are among the surgical specialties in the *Federal Register* but are not specifically referenced in the Area Resource File. Otolaryngologists were substituted for this specialty.

Table X-2
Medical and surgical specialist supply trends, United States: 1984-93

Specialty	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Total Physicians	362,063	371,948	381,833	393,996	409,277	421,587	429,471	443,028	456,585	465,231
Medical Specialists	243,051	250,590	258,130	268,415	280,286	289,312	295,471	306,152	316,834	325,040
Surgical Specialists	119,012	121,357	123,703	125,581	128,991	132,275	134,000	136,875	139,751	140,191
Ratio of Medical to Surgical Specialists	2.04	2.06	2.09	2.14	2.17	2.19	2.21	2.24	2.27	2.32

SOURCE: Data derived from tables prepared by Project HOPE: Data based on the Area Resource File and Health Care Financing Administration Denominator File.

Table X-3

Total physicians per 100,000 Medicare beneficiaries, by region, United States: 1984-93

Region	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	Average Annual Percent Change 1984-92	Average Annual Percent Change 1992-93
U.S. Total	1,249	1,259	1,267	1,282	1,313	1,332	1,334	1,352	1,370	1,363	1.15	-0.47
Region												
Northeast	1,400	1,415	1,432	1,468	1,515	1,549	1,560	1,595	1,628	1,633	1.90	0.33
Midwest	1,101	1,106	1,112	1,118	1,143	1,156	1,155	1,173	1,189	1,194	0.97	0.39
South	1,108	1,121	1,133	1,153	1,180	1,193	1,194	1,208	1,222	1,209	1.23	-1.07
West	1,544	1,546	1,533	1,525	1,552	1,575	1,577	1,580	1,589	1,566	0.36	1.46
Metropolitan Areas	1,489	1,498	1,506	1,526	1,563	1,586	1,590	1,613	1,638	1,629	1.20	-0.52
Large Metropolitan Core	1,732	1,745	1,759	1,789	1,839	1,869	1,878	1,913	1,950	1,940	1.49	-0.49
Large Metropolitan Fringe	852	862	873	889	913	933	932	942	949	962	1.35	1.40
Medium Metropolitan	1,253	1,258	1,263	1,273	1,300	1,317	1,318	1,330	1,344	1,335	0.88	-0.64
Lesser Metropolitan	1,167	1,175	1 175	1,177	1,198	1,216	1,213	1,228	1,244	1,242	0.81	-0.15
Nonmetropolitan Areas	534	541	545	541	551	557	551	547	543	538	0.21	-0.98
Urbanized Adjacent	736	739	741	729	743	749	739	733	727	721	-0.15	-0.85
Urbanized Nonadjacent	1,014	1,023	1,024	1,025	1,039	1,050	1,044	1,047	1,050	1,040	0.43	-0.88
Less Urban Adjacent	426	434	441	439	446	452	446	441	436	429	0.29	-1.47
Less Urban Nonadjacent	493	498	498	492	501	504	499	493	488	485	-0.12	-0.64
Thinly Populated Adjacent	237	242	246	251	257	254	247	242	238	232	0.05	-2.36
Thinly Populated Nonadjace	256	260	262	255	261	261	252	249	246	240	-0.52	2.60
Ex-Ante Impact Group												
Increase	1,191	1,196	1,188	1,197	1,220	1,236	1,241	1,254	1,265	1,259	0.76	-0.44
No Change	1,092	1,105	1,118	1,136	1,166	1,191	1,197	1,216	1,234	1,238	1.54	0.37
Moderate Decrease	1,275	1,285	1,295	1,315	1,349	1,367	1,369	1,394	1,419	1,419	1.35	-0.04
Large Decrease	1,386	1,394	1,400	1,407	1,437	1,455	1,453	1,459	1,470	1,445	0.74	-1.69

NOTES: Ex Ante Impact Group refers to areas grouped according to expected changes in Medicare physician payment under physician payment reform, as published in the Federal Register 56:227. See Appendix I.

Metropolitan and nonmetrophtan areas are based upon 1990 census classifications.

SOURCE: Data derived from table prepared by Project HOPE: Data based on the Area Resource File and Health Care Financing Administration Denominator File.

Table X-4

Surgical specialists per 100,000 Medicare beneficiaries by region, United States: 1984-93

Region	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	Average Annual Percent Change 1984-92	Average Annual Percent Change 1992-93
U.S. Total	411	411	410	409	414	418	416	418	419	411	0.26	-2.03
Region												
Northeast	446	447	449	451	459	467	468	471	474	466	0.76	-1.73
Midwest	350	349	348	345	350	352	350	352	353	349	0.12	-1.30
South	389	390	391	390	395	398	395	396	398	388	0.28	-2.36
West	496	495	488	481	483	488	486	484	484	472	-0.30	-2.62
Metropolitan Areas	496	496	495	492	498	503	501	503	505	495	0.22	-2.14
Large Metropolitan Core	572	572	573	573	581	588	589	593	598	584	0.56	-2.28
Large Metropolitan Fringe	263	263	264	262	267	274	271	271	270	267	0.31	-0.89
Medium Metropolitan	430	427	424	419	424	427	423	423	424	416	0.17	-1.96
Lesser Metropolitan	399	398	394	389	392	393	387	388	389	385	-0.30	-1.18
Nonmetropolitan Areas	155	156	157	155	157	159	157	155	154	151	-0.03	-1.88
Urbanized Adjacent	250	250	249	244	246	246	240	238	235	228	-0.76	-3.14
Urbanized Nonadjacent	368	368	366	364	364	366	362	361	360	350	-0.29	-2.75
Less Urban Adjacent	104	107	110	109	111	112	112	110	108	107	0.56	-1.39
Less Urban Nonadjacent	133	135	136	132	134	135	133	132	130	130	-0.27	-0.54
Thinly Populated Adjacent	24	26	27	28	28	29	29	28	27	29	1.04	8.30
Thinly Populated Nonadjacent	36	35	35	32	33	34	32	33	34	33	-0.75	-4.13
Ex-Ante Impact Group												
Increase	391	390	384	381	385	387	387	389	391	383	-0.01	-1.92
No Change	352	353	355	353	358	365	364	367	369	365	0.60	-0.98
Moderate Decrease	419	419	419	418	424	427	426	428	431	422	0.33	-1.95
Large Decrease	462	462	462	458	462	466	463	461	461	448	-0.03	-2.89

NOTES: Ex Ante Impact Group refers to areas grouped according to expected changes in Medicare physician payment under prospective payment reform, as published in the Federal Register 56:227. See Appendix I.

Metropolitan and nonmetroplitan areas are based upon 1990 census classifications.

SOURCE: Data derived from tables prepared by Project HOPE: Data based on the Area Resource File and Health Care Financing Administration Denominator File.

Table X-5

Medical specialists per '00,000 Medicare beneficiaries, by Region, United States: 1984-93

Region	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	Average Annual Percent Change 1984-92	Average Annual Percent Change 1992-93
U.S. Total	839	848	856	873	899	914	918	934	950	952	1.58	0.21
Region												
Northeast	954	967	982	1,017	1,057	1,082	1,092	1,124	1,153	1,167	2.40	1.20
Midwest	751	757	764	773	793	805	804	821	836	845	1.35	1.10
South	719	731	743	763	785	795	799	811	824	820	1.72	-0.45
West	1,048	1,052	1,045	1,044	1,069	1,087	1,091	1,096	1,105	1,094	0.67	-0.95
Metropolitan Areas	992	1,002	1,012	1,034	1,065	1,083	1,089	1,110	1,132	1,135	1.67	0.20
Large Metropolitan Core	1,161	1,173	1,186	1,217	1,258	1,281	1,289	1,320	1,352	1,356	1.92	0.31
Large Metropolitan Fringe	589	599	609	628	646	659	661	671	680	695	1.79	2.31
Medium Metropolitan	823	831	839	854	876	890	895	907	920	920	1.40	0.03
Lesser Metropolitan	768	777	781	788	806	823	826	840	855	858	1.35	0.32
Nonmetropolitan Areas	380	385	388	386	394	398	394	392	389	387	0.31	-0.64
Urbanized Adjacent	485	489	492	485	497	503	499	496	492	493	0.16	0.22
Urbanized Nonadjacent	646	655	659	661	675	684	682	686	690	691	0.82	0.10
Less Urban Adjacent	322	327	332	330	334	340	334	331	328	323	0.21	1.50
Less Urban Nonadjacent	359	363	363	360	367	369	366	362	357	355	-0.07	0.67
Thinly Populated Adjacent	212	216	219	223	229	224	218	215	211	203	0.07	3.69
Thinly Populated Nonadjacent	220	224	227	223	228	226	221	217	212	207	-0.47	2.41
Ex-Ante Impact Group												
No Change	740	752	763	783	808	826	834	850	865	873	1.96	0.95
Moderate Decrease	856	866	876	896	925	939	942	966	989	997	1.82	0.80
Large Decrease	924	932	939	949	974	989	990	998	1,009	997	1.11	1.15

NOTES: Ex Ante Impact Group refers to areas grouped according to expected changes in Medicare physician payment under physician payment reform, as published in the Federal Register 56:227. See Appendix I.

Metropolitan and nonmetroplitan areas are based upon 1990 census classifications.

SOURCE: Data derived from tables prepared by Project HOPE: Data based on the Area Resource File and HCFA Denominator File.

Appendix XI

Access to Care in the Early Years of Fee Schedule Implementation: A Physician-based Analysis

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Appendix XI

Access to Care in the Early Years of Fee Schedule Implementation: A Physician-based Analysis

INTRODUCTION

Monitoring the effects of the Medicare Fee Schedule (MFS) on access entails not only analyses of beneficiary utilization patterns, but also of physician service delivery. Several possible effects are best examined from the perspective of the physician supplying care. Impacts may include changes in the physician's involvement in the Medicare market, as measured by the volume of patients treated and by participation in the delivery of specific types of services. Another set of impacts comprises changes in physician financial measures--changes which may presage eventual access problems.

The analysis of physician service delivery is based on all the Medicare claims of a scientifically selected sample of Medicare physicians. In this appendix we build upon the physician-based investigations presented in the 1994 Report to Congress.[1] Thanks to improvements in reporting of physician identifiers on Part B claims, this year's study covers twice as many States as last year's. The analyses pertain to the entire population of Medicare physicians, instead of the physicians who billed Medicare in two consecutive years.[2] An additional physician descriptor has been developed, to study any differential impacts in rural, traditionally underserved areas. We examine 3-year trends for 15 States with claims data adequate for analysis back to 1991.[3] Finally, we report allowed charge data on 100 percent of physicians from 29 States, available from newly created HCFA files; this resource provides more reliable estimates of change than sample data.

The analyses consider four measures of access from the physician perspective. These are:

1. The physician's caseload--i.e., total number of different Medicare patients treated in a year. Caseload is one reflection of willingness to deliver services under the Medicare insurance program.

2. The performance rate for specified procedures or services. In addition to adjusting caseload, a physician may respond to reduced fees by selectively withdrawing particular services from his/her services mix.

3. Allowed charges per physician. Medicare revenues provide information about the economic importance of Medicare in the physician's practice.

4. The assignment rate--i.e., assigned charges as a fraction of allowed charges. Accepting payment on assignment is a longstanding indicator of physician decisionmaking related to access.

For the most part, we continued the approach to data interpretation adopted last year Stable or growing measurements of caseload, performance rates, and payments are taken as evidence of no adverse effects of the MFS pricing regime, conversely, declining measurements may signal emerging problems that warrant more-intensive monitoring Important change measures are also examined in relation to general estimates of statewide price changes brought by the MFS This approach looks for evidence that physician reactions vary according to the general size and direction of price change While a preferable approach would define pre-fee schedule trends and compare them to post-fee schedule developments, incorporating accurate measures of price changes confronting the individual physician, the physician-based data are inadequate to the task

METHODS

Sample development and limitations

Our ability to detect shifts in access measures depends on assembling all claims from a large set of physicians These physicians should be representative of those treating Medicare beneficiaries during the study years. In 1989 Medicare began phasing in unique physician identifiers, called UPINs, on Part B claims [4] The new UPIN data file summarizing 100 percent of 1992 physician allowed charges served as our sampling frame [5] The resulting Part B Physician Sample[6] is randomly selected within each State [7]

One caveat for this analysis is that results are generalizable only to physicians who had at least one Medicare patient incurring non-denied charges during the year, subject to the qualification explained below. The sampling methodology is designed to capture all Medicare activity of the physician across the study years Sample members without claims in a given year are not studied for that year, because reliable information to explain an absence is not available [8]

To the extent that physicians are absent due to UPIN reporting failure, the results may not be representative of physicians in Medicare practice. We do not believe this is a significant problem in the study States, which were selected because of their Medicare carriers' high UPIN reporting rates on Part B claims. Similarly, a potential problem of missing claims for physicians who are in the sample is not considered serious. We assume that missing claims affect physicians randomly and do not vary systematically with time.[9]

Technical Note A shows the number of physicians included in the study after deleting individuals who were not assigned a UPIN by the start of the year.[10] The deletions, necessary for making comparisons over time, mean that the sample may underrepresent some groups of physicians. Most notably, the sample may underrepresent new physicians who entered practice during the year, applied for a UPIN, and began to treat Medicare patients. However, such physicians would be included the following year.

For 1992, a total of 15,987 physicians were studied Each year the sampling scheme selects all physicians whose UPIN ends in one of the terminal-digit pairs on the sampling list. Though the

service. These two problems warrant caution when interpreting the tables showing access measures by urbanization of the practice site [16]

Analysis methods

We compare annual means to test for changes from one year to another. The tests allow for correlation in the data of the physicians observed more than once [17] To examine changes in measures by physician specialty, we pooled the State data and weighted them in accordance with the fraction of Medicare physicians practicing in each State.

The performance rate analysis was conducted on paired observations using tests for correlated data, as well as on the complete samples (allowing for correlation), but the estimates are not weighted ones.

To analyze 3-year results for 15 States, we tested changes for two pairs of consecutive years: 1991-92 and 1992-93. We also computed the average annual percent change for each series of State means.

As in the 1994 report, the study is limited by the absence of accurate measures of price changes confronting the individual physician. HCFA's 1991 forecast of the State-level percent change in average price per service was used to look for patterns in caseload and performance rate changes in relation to fee changes [18]

Unless otherwise noted, or unless reporting the 3-year trends (which were not significance-tested), we cite differences in means only when they are statistically significant.[19] However, failure to mention a difference does not necessarily imply that it did not reach statistical significance [20] No tests were done on changes in medians or in an entire distribution, although several shifts are noted.

RESULTS

Physician caseload

Caseload in total and by State

Between 1992 and 1993, the average Medicare caseload among the States[21] in the study grew by 11 patients per physician, or 3 percent (Table XI-1) [22] On average, a physician in 1992 had 322 Medicare patients, increasing to 333 patients in 1993.

For most of the States, the estimates suggest stable caseloads; changes were within plus or minus 5 percent, and were not statistically significant. Most of the statistically reliable changes were increases: 12 percent in Maryland (35 patients), 6 percent in New York (15 patients), 5 percent

in New Jersey (16 patients), 11 percent in Texas (31 patients), and 7 percent in Oklahoma (24 patients). Only Oregon's physicians had a decrease 6 percent, or an average of 13 patients

Besides Oregon, declines in two other State medians suggested that there might have been a nontrivial drop in caseloads for some physicians. These additional States were South Carolina and Idaho (the two States where the negative mean difference was slightly above the significance probability of .05). The medians of all the States are lower than the means, which are sensitive to the very high caseloads of some physicians.

In the 1994 report, caseload changes did not appear to be influenced by changes in price per service during 1991-92. Visualization of the 36-State data suggests that caseload change between 1992 and 1993 was related to the average price change HCFA forecasted for the period 1991-1996. As shown in Figure 1, deeper price cuts are associated with larger increases in caseload (both expressed in percentage terms). A descriptive regression of the State-level caseload percent change on the percent changes in price and non-HMO Medicare enrollment, controlling for an autonomous time trend, suggested that a - 24 percent change in caseload would accompany each 1.0 percent increase in price (see Technical Note B for details).

The 3-year trend in caseloads (Figure 2) suggests a continuous upward trend averaging 4 percent to 7 percent per year in six States: Florida, Kansas, Kentucky, Utah, Alaska, and Tennessee. In Oregon there is a downtrend averaging about -4 percent per year, mostly due to the statistically significant drop in 1992-93. Of the eight remaining States, five had a small caseload increase over the 3 years, and three experienced small declines. The few statistically significant t-tests show mostly gains in caseload occurring between 1991 and 1992.

Caseload by specialty

Specialty groups were unevenly affected by the Medicare Fee Schedule, with highly specialized physicians experiencing more price cuts among the services they perform. Primary care physicians, medical subspecialists, and radiologists/anesthesiologists/pathologists displayed above-average growth in caseload between 1992 and 1993 (Table XI-2). Their gains were in the range of 4 percent to 5 percent. Statistical evidence is weaker to support the measured gain for surgeons--about 2 percent, or 6 patients per physician (prob. < 0.06). The two remaining groups, psychiatrists and limited license practitioners, appear to have had stable caseloads.

Among the detailed specialties, cardiologists, internists, and family practitioners experienced 5 percent caseload increases. Obstetrician-gynecologists saw six more patients on average, which amounted to an 8 percent gain in average caseloads because of their low general levels (76 patients apiece in 1993).

The medians in Table XI-2 were computed from a 2 percent self-weighting sample from all the study States. Though not formally tested, most of the medians seem to indicate stable or growing caseloads. Notable exceptions were confined to several surgeon groups, with otolaryngology and

podiatry showing declines on the order of 10 percent, and ophthalmology and orthopedic surgery falling 3 percent or less

Over the 3-year period 1991-1993, except for surgeons, average caseloads trended upward, although growth seemed to slow in several of the groups during 1992-1993 (See Figure 3, based on weighted data from 15 States) In fact, consistent with the State-specific means, all of the statistically reliable changes in specialty caseloads occurred in 1991-92 The average annual growth was as low as 1 percent and 2 percent for medical subspecialties and surgical specialties, respectively, and as high as 8 percent and 12 percent for the psychiatrists and limited license practitioners, the two groups with relatively small bases The primary care practitioners, who traditionally serve as point of entry into the health care system, added an average of 19 more patients in 1992, and their 3-year growth in caseload averaged 6 percent per year

Caseload by urbanization of the practice location

One of the goals of physician payment reform was to reduce fee inequities between rural and urban physicians We therefore examined access measures along the dimension of urbanization of the physician's practice location [23]

Although metropolitan and nonmetropolitan physicians have similar Medicare caseload averages, a finer classification suggests some variation across different levels of urbanization[24] (Table XI-3) Physicians in the least urbanized areas--rural areas as well as smaller-population nonmetropolitan counties removed from a metropolitan area--appear to have lower average caseloads of 200 to 300 patients They share this general level with physicians practicing in the large core metropolitan areas The remaining groups have, on average, between 300 and 400 patients.

Changes in caseload between 1992 and 1993 were statistically stable or positive regardless of urbanization category Statistically reliable growth in average caseload was confined to some of the most urbanized groups: large core metropolitan, small metropolitan, and nonmetropolitan urban counties adjacent to metropolitan areas The caseload gain in these areas was 3 percent to 5 percent Declines of 3 percent and 7 percent for the two groups of rural physicians, though not statistically reliable, were mirrored in the median changes

During the 3-year period 1991-93 (based on data from 15 States covering nine categories[25]), the caseloads appear fairly stable in most of the groups Among physicians in central core metropolitan counties, the average rose at an annual rate of 3 percent (due to an increase of 11 patients per physician in 1992) (Figure 4) The rural physicians had no significant changes in caseload, though the computed averages appear to have fluctuated.

Caseload by race of patient

An important question in evaluating MFS impacts is whether disadvantaged groups are more vulnerable to potentially deleterious fee-schedule effects than others Accordingly, we examined

caseload by race of the patient. Caseloads among the physicians' white patients grew 3 percent, as did the all-patient caseload reported earlier (Table XI-4). For black patients, the average caseload grew about 5 percent; for patients of other races, 17 percent; and for patients of unknown race, 14 percent. The large percentage growth for patients in the "other" and "unknown" race groups reflects the very small bases for these groups -- an average per physician of 8 and 4 patients, respectively, in 1992.

In comparison to these changes in patients seen, non-HMO Medicare enrollment grew approximately 1 percent for white beneficiaries, 2 percent for black beneficiaries, 15 percent for beneficiaries in the "other" category, and 4 percent for beneficiaries of unknown race. We compared the actual caseload growth with the caseload change that would be predicted from enrollment growth. For most of the groups, the comparison provided only modest evidence that caseload growth outpaced enrollment growth (p-values for the test were .04, .06, and .07 for white, black, and "other," respectively). For patients of "unknown" race, the evidence was stronger (p-value < .0001).

State-level estimates for white and black beneficiaries suggest that a few States were largely responsible for the two groups' overall gains in caseload: Maryland, New York and Texas for white beneficiaries; Florida, Maryland, Texas, and Nevada for black beneficiaries. Whereas two States, Oregon and South Carolina, registered a decline for white patients, no States showed losses for black patients.

Most States' data revealed comparatively large gains in caseload for patients in the "other" racial category, as well as the "unknown" category.

Performance rates for detailed procedures groups

To study access indicators for services most affected by price decreases under the MFS, we examined change in the physicians' delivery of 44 categories of surgical and diagnostic procedures. Last year's analysis of 1991-92 changes, based on paired sample data from 18 States, suggested general stability among the performance rates. There were declines exceeding 7 percent in the number of physicians performing procedures in three procedure categories: hip fracture repairs, ambulatory inguinal hernia repairs, and miscellaneous minor procedures not priced under the fee schedule. Performers of cataract operations, musculoskeletal ambulatory procedures, and laparoscopic cholecystectomy increased.

Between 1992 and 1993, based on paired-sample data from 36 States, nine procedure categories experienced declines in performers, amidst a possible broad drift downward in participation in surgeries (Figures 5 and 6). The nine categories were colectomy (-88 surgeons), cholecystectomy (-66), other major procedures (-114), thromboendarterectomy (-40), pacemaker insertion (-50), hip fracture repair (-58), inguinal hernia repair (-54), upper gastrointestinal endoscopy (-43), and sigmoidoscopy (-22). (See Table XI-C-1 in Technical Note C for detailed data.) In addition, transurethral resection of the prostate (TURP), major breast procedures, coronary artery bypass

grafts (CABG), and "other" minor procedures priced under the fee schedule exhibited relatively reliable declines (prob < 0 02) The only categories exhibiting an increase in performers were lithotripsy and minor procedures not priced under the fee schedule

Examination of performance rates for all the physicians in the study again suggests a generally small, broad-based decline in performance rates, with most of the statistical test results similar to the paired data results (see Technical Note C, Table XI-C-3).[26]

We wanted to investigate whether the decline in the performance rates for surgeons was associated with a decline in participation of assistants at surgery. To investigate this, we reanalyzed the performance rates for physicians serving as primary surgeon (as opposed to assistant). Medicare pays assistants at surgery 16 percent of the allowed charge. Given procedure-price reductions, this fraction may now be low enough to deter participation as assistant in some cases. The results for primary performers, based on paired data, suggested few departures from the initial analysis. An example of a departure is colectomy. For colectomy, the percent decline for primary performers changed from -9 percent in the initial analysis to -5 percent in the reanalysis (cf. Tables XI-C-1 and XI-C-2). For hernia repair, the percent decline halved. Other departures were small. Thus it appears that assistants at surgery were not primarily responsible for the lower performance rates observed between 1992 and 1993.

To check for a pattern of change in relation to price changes under the MFS, we classified all paired-sample physicians into four groups, according to the average Statewide price change HCFA forecast under the fee schedule: (1) increase (4 percent to 9 percent); (2) no change (+3 percent to -3 percent); (3) moderate decrease (-4 percent to -9 percent); and (4) large decrease (-10 percent to -20 percent). For each class of physicians, we computed the average percent change in surgery participants across all 44 procedure groups. This average varied significantly and systematically across categories of price change (Figure 7).[27] The "increase" category had the largest average decrease (-4.57 percent), followed by the "no change" category (-3.21 percent), the "moderate decrease" group (-2.26 percent) and the "large decrease" group (0.19 percent). Thus the declines found in the number of performers do not appear to result from price disincentives associated with the Medicare Fee Schedule.

Allowed charges per physician

Allowed charges per physician in total and by State

National Claims History data from 100 percent of physicians in 29 States show that between 1992 and 1993 average physician allowed charges rose by about 1 percent, or $1,048 (Table XI-5). At the State level, gains were as small as 1 percent in Illinois and as large as 7 percent in Wyoming. Statistically significant reductions in average allowed charges ranged from -9 percent in Oregon to -2 percent in Tennessee. Of the seven States[28] omitted from the 100 percent-of-data analysis, the sample data indicate that only Maryland physicians exhibited a change; mean allowed charges increased $5,262, or 8 percent.

The 3-year examination of allowed charges, based on 100 percent NCH data, discloses a variety of patterns among the 17 States analyzed (Figure 8).[29] In a plurality of States--Alabama, Alaska, Hawaii, Indiana, Nevada, Oklahoma, and Texas--allowed charges dropped significantly in 1992, the first year of the MFS, and then remained stable. The average annual growth ranged between -2 percent and -6 percent. There was little change between 1991 and 1993 in the average physician's allowed charges in Idaho, Kentucky, Montana, North Carolina, and Utah. In South Carolina average allowed charges grew at an average annual rate of 6 percent. In Oregon, the average rose and then fell, while in Florida, it fell only to rise later. Finally, physician allowed charges decreased each year in Arizona, at an average annual rate of -6 percent and, in Tennessee, at a smaller rate of about -2 percent per year. Technical Note D presents the changes in allowed charges for the sample physician data.

Allowed charges by specialty

Mean allowed charges among the major specialty classes were generally stable between 1992 and 1993, except for the medical subspecialties (Table XI-6). Detailed estimates for that group show an increase of $11,481 (7 percent) for the average cardiologist, and suggest a statistically less significant gain of $9,568 (11 percent) for internists (prob. < 0.06).

Three-year trends in allowed charges by specialty, based on 15-State data, suggest little in the way of notable changes (Figure 9). An increase for primary care practitioners in 1991 contributed to the relatively high average annual growth of 4 percent. LLPs (chiropractors and optometrists) averaged 10 percent growth because of a proportionately sizable increase of $1,507 in 1992 (prob. < .07).

Surgeons were the only group that appeared to experience a continuing downtrend--at least in the limited number of States contributing data for the three-year analysis by specialty. Thus, to the extent that the State-level data showed continuing declines, they were associated with surgeons. The medians for both surgeons and radiologists/anesthesiologists/ pathologists fell between 1991-92 and between 1992-93 (data not shown). But the larger, 36-State sample does not indicate a decline in these two specialty groups' average allowed charges between 1992 and 1993. This suggests that results from the three-year State sample cannot necessarily be generalized to the broader set of States.

Allowed charges by urbanization status

When categorized by urbanization status, physicians in MSAs and in non-MSAs experienced no significant change in average allowed charges (Table XI-7). However, a more-detailed classification reveals that the most urbanized physicians (those in large, core counties of metropolitan areas) and a relatively urbanized nonmetropolitan group (physicians in nonmetropolitan urban areas adjacent to a metropolitan area) each had average allowed charge increases of 3 percent to 4 percent. The gains are to be expected, as they coincide with the relatively strong caseload growth for these groups (cf. Table XI-3). Similarly, the 8 percent loss

in average allowed charges for the most rural group, though not statistically significant, reflects a 7 percent loss in caseload. The median for rural physicians adjacent to a metropolitan area dropped by 40 percent, but finer comparison of the allowed charge distributions for 1992 and 1993 suggested so extreme a loss is infrequent (data not shown) [30]

The 15-State data show that during the first year under the fee schedule, physicians in medium-sized metropolitan areas had a 5 percent decrease in average allowed charges. During 1991-93, they had a 3 percent average annual decline (Figure 10).

Assignment rates per physician

Assignment rates by State

When the physician accepts assignment of the Medicare allowed charge, the patient's costs are more predictable and often lower than under nonasssignment. In the 1994 Report to Congress, the physician-based analysis of a panel of physicians found widespread gains in assignment rates between 1991 and 1992. These gains tended to hold across States, specialties, and race of the patient.

This year's analysis, which examines the mean of physician-level ratios,[31] suggests the uptrend is continuing (Table XI-8). The mean assignment rate increased by 5 percentage points on average, reaching 86 percent in 1993.

The mean assignment rate varies somewhat by State, but in the vast majority of States it rose. Of the five States with stable data, four have relatively high assignment rates: Maryland, Massachusetts, Nevada, and West Virginia. (In Massachusetts assignment is mandatory.) An additional stable area, North Dakota, has a relatively low assignment rate (68 percent in 1993).

Of the three States with median assignment rates well under 100 percent in 1992, two rose to 100 percent in 1993, so that 34 of the 36 States had a median of 100 percent by 1993. A median value of 100 percent means that at least half of the physicians accepted assignment on all of their allowed charges. A median value of 30 percent means that at least half of the physicians accepted assignment on 30 percent of their allowed charges.

Assignment rates by race of patient

For white patients, the trend in assignment rates mirrors the national one (Table XI-9). For black patients and patients of "other" and unknown race, for whom the data suggest assignment rates are higher, the changes are also much the same. Indications that assignment rates declined for North Dakota minority patients by 3 to 6 percentage points[32] may reflect change among a small number of physicians; note that Table XI-4 shows that the average number of black patients for North Dakota physicians is less than one.

DISCUSSION

The findings from the wide range of States included in this year's physician-based analysis give little or no indication of access dislocations during 1993, the second year of fee schedule implementation. State-level data show, almost universally, that the average physician's Medicare caseload was stable or increasing. Although primary care and certain other medical specialties may have had stronger caseload gains than others, especially surgeons, no specialty group we studied reliably evidenced a general loss of patients. The suggestion in our data that rural physicians may have had adverse caseload changes must at this time be considered weak. Improvements in physician classification and enlargement of this subsample in future studies may clarify this finding.

The 3-year analyses tended to show that compared to the 1991-92 period, caseload growth slowed in 1992-93. It is not necessarily the case that 3-year trends, observed in 15 States, are indicative of the national experience.

Allowed charge trajectories either were flat in many places or stabilized after a 1991-92 decline. The trends partly reflect fee updates which favored some recovery of surgery fee levels after the first year of the fee schedule. Again, this argues for benign effects of the Medicare Fee Schedule as far as access is concerned.

The finding of an inverse relationship between caseload and price change, though merely preliminary given the paucity of variables in the regression model, is consistent with the theory that physicians will adjust to adverse price movements by working harder in the short term. But usually this behavioral-offset hypothesis posits that physicians can most easily adjust primarily by working more intensively on their existing patients. A trend to adding patients might be more readily explainable as an effect of the patients' response to price changes, especially considering that assignment is continuing to grow. However, such a conclusion would be premature, because analyses directed specifically at the role of patient demand were not undertaken.

The analysis of performance rates suggests a general decline in the number of physicians performing numerous surgical procedures between 1992 and 1993, although the reductions are usually not statistically significant. We found that a decline in assistants-at-surgery contributed slightly to declines in this measure, but declines in assistants could not fully explain the decreases in performance rates. A role for price changes in the explanation was hinted by the pattern of larger performer decreases in relation to positive movements in price. However, there may be other explanations for these decreases. To understand the extent to which performance rate changes are economically motivated requires further analysis relating the trends to changes in specific health conditions, clinical and technological developments, price, and other market variables. Given the state of knowledge and data at this time, we tentatively conclude from this pattern that the MFS's price cuts did not prompt surgeons to turn away from Medicare, as some had feared.

Changes in clinical decision making, with or without economic incentives, may be at work in various procedure trends. In the case of TURP, data since the 1980s show a marked decline in the number of surgeries[33] and in age-adjusted Medicare surgery rates[34]. Alternative therapies and changes in patient and physician preferences appear to be responsible. Thromboendarterectomy is another instance in which clinical practice may have been in flux.[35] For cholecystectomy, substitution of an ambulatory procedure, laparoscopic cholecystectomy, became widespread in the early 1990s.[36]

Treatment decisions are also affected by private and public utilization control mechanisms. In 1992 Medicare established a program of Part B "Focused Medical Review" (FMR), under which Carriers analyze claims patterns and other data for evidence of excessive services. In 1993, the program led to special medical review activities for sigmoidoscopy at six carriers, of which five were included in this study (i.e., carriers covering Indiana, Louisiana, Massachusetts, Texas, and Utah). Thus, the decline in physicians performing sigmoidoscopies in the Part B sample appears attributable, at least in part, to the new medical review initiative. FMR is a potential contributor to declines in other procedure categories, as are controls and incentives in private plans. The latter may conceivably exert a spillover effect on the practices of Medicare physicians.

Taken together with the surgeons' caseloads, which were fairly stable over time, the general decline in performance rates could mean that, while surgeons generally continued to see Medicare patients about as much as they had previously, the decision to perform a procedure in some cases may have changed. We intend to accumulate more evidence on this question in follow-up work. It is also possible that caseloads decreased among some detailed surgical specialties not identified in our analyses.

Potentially, economically motivated responses behind a change in surgical decisionmaking might be to not recommend surgery or to refer the patient elsewhere for surgery. If the predominant response is to refer patients elsewhere, surgery rates among Medicare beneficiaries may not betray it. Note, however, that Medicare hospital discharge rates for selected operations also indicate recent slower growth. This development would be consistent with the 1993 decline in primary performers observed in the physician data. The slower-growth categories include cholecystectomy, carotid endarterectomy, CABG, PTCA, total knee replacement, and hysterectomy. (Technical Note C displays the trends graphically.) In the case of inguinal hernia repair, a steady decline in the discharge rate appears to predate the Medicare Fee Schedule and may be due in part to growing use of ambulatory surgery.

If the performance rate and surgery discharge data portend a narrowing of the population of Medicare surgery performers, there are several implications for access besides a slowing in surgeries per beneficiary. One is that some patients may be taking a more circuitous route to find their ultimate treatment supplier than they otherwise would have. Another is that the mix of surgical providers could be changing. The character and performance of a changing Medicare surgeon population would require some study to gauge the essential impacts, which could extend to quality of care as well as access. One hypothesis is that physicians in large-volume centers are

a likely referral destination, which might actually imply better quality of surgical treatment Another is that some less skilled surgeons may be more likely to accept the referred patients Several of these outcomes are difficult to study As for any impacts of fewer assistants at surgery, information is needed to understand the distribution and potential substitution of other health professionals besides physicians who serve as assistants

Table XI-1

Mean caseload per physician, change and percent change in mean, and median, for 35 States and the District of Columbia: 1992-93

State	1992 Mean Caseload	1993 Mean Caseload	1992-93 Change in Mean	1992-93 Percent Change in Mean	1993 Median Caseload	1992-93 Percent Change in Median
TOTAL (a)	322	333	11 **	3	178	7
Alabama	416	437	21	5	294	11
Alaska	96	101	5	6	56	-8
Arizona	323	317	-6	-2	142	0
Delaware	334	333	-2	-0	219	-1
District of Columbia	223	225	3	1	117	10
Florida	425	442	17	4	229	11
Hawaii	179	177	-2	-1	90	0
Idaho	311	297	-15	-5	145	-19
Illinois	298	301	3	1	161	-1
Indiana	328	338	10	3	236	3
Iowa	372	381	9	2	258	4
Kansas	341	346	5	1	197	-2
Kentucky	354	366	13	4	231	5
Louisiana	343	343	0	0	210	0
Maine	379	366	-13	-4	224	1
Maryland	282	317	35 **	12	179	28
Massachusetts	302	305	3	1	135	-0
Montana	337	352	15	5	211	3
Nebraska	403	397	-6	-2	226	-8
Nevada	313	326	13	4	182	5
New Jersey	293	309	16 *	5	172	2
New Mexico	256	266	10	4	123	-6
New York	260	274	15 *	6	143	2
North Carolina	384	371	-13	-4	246	-5
North Dakota	399	408	9	2	262	6
Ohio	338	359	21	6	200	0
Oklahoma	341	365	24 *	7	216	1
Oregon	225	212	-13 *	-6	108	-14
Pennsylvania	354	354	1	0	178	2
South Carolina	390	370	-20	-5	237	-14
South Dakota	336	348	12	4	245	11
Tennessee	363	384	20	6	256	0
Texas	274	304	31 **	11	160	13
Utah	225	227	1	1	114	-6
West Virginia	413	427	14	4	263	5
Wyoming	185	183	-3	-1	111	-3

* = statistically significant at .05 level

** = statistically significant at .01 level

(a) Means for Total weighted based on estimated Medicare physician populations of the 36 States. Median for Total based on a self-weighting 2% sample from the 36 States.

SOURCE: HCFA Part B Monitoring System: National Claims History Physician Sample File.

Table XI-2

Mean caseload per physician, change and percent change in mean, and median, by specialty group: 1992-93

Specialty (a)	1992 Mean Caseload (b)	1993 Mean Caseload (b)	1992-93 Change in Mean		1992-93 Percent Change in Mean	1993 Median Caseload (c)	1992-93 Percent Change in Median
Primary Care	263	275	12	**	5	198	6
Family Practice	277	291	14	**	5	219	3
General Practice	266	275	8		3	188	4
Psychiatry	66	68	2		2	29	7
Medical Specialties	350	364	14	**	4	299	2
Cardiology	501	524	23	*	5	477	2
Internal Medicine	333	350	17	**	5	291	6
RAP (d)	766	806	40	*	5	341	13
Anesthesiology	230	237	7		3	192	5
Radiology	1385	1455	70		5	1210	17
Surgery	298	304	6		2	170	3
General Surgery	229	235	6		3	207	4
Obstetrics/Gynecology	70	76	6	**	8	51	13
Ophthalmology	764	747	-17		-2	593	-3
Orthopedic Surgery	247	250	3		1	227	1
Otolaryngology	318	315	-2		-1	259	-10
Podiatry Surgery	394	403	9		2	294	11
Urology	472	487	15		3	477	7
LLP (e)	86	86	-0		-0	40	1
Chiropractic	43	43	0		1	29	0
Optometrist	155	154	-1		-1	86	5

* = Statistically significant at .05 level

** = Statistically significant at .01 level

(a) Data from the six broad specialty groups may include physicians in detailed specialties not shown

(b) Means weighted based on estimated Medicare physician populations of the 36 States.

(c) Median based on a self-weighting 2% sample from the 36 States.

(d) Subtotal for radiology, anesthesiology, and pathology.

(e) LLP = Limited license practitioners. Oral surgeons and podiatrists are also LLPs but included with Surgeons for this analysis

SOURCE: HCFA Part B Monitoring System. National Claims History Physician Sample File.

Table XI-3

Mean caseload per physician, change and percent change in mean, and median, by urbanization status: 1992-1993

Urbanization Status	1992 Number of Sample Physicians	1992 Mean Caseload	1993 Number of Sample Physicians	1993 Mean Caseload	1992-93 Change in Mean	1992-93 Percent Change in Mean	1993 Median Caseload	1992-93 Percent Change in Median
Metropolitan Counties	12,293	317	12,920	324	7 **	2	174	5
Large core	5,292	275	5,504	284	9 **	3	140	4
Large fringe	349	311	369	331	20	6	173	1
Medium	4,566	342	4,842	343	1	0	190	1
Small	2,086	368	2,205	379	11 *	3	222	2
Non-metropolitan Counties	3,625	321	3,760	329	8 *	2	211	0
Urbanized, adjacent	541	362	551	380	18 *	5	254	2
Urbanized, not adjacent	1,088	345	1,110	355	10	3	182	1
Less urbanized, adjacent	706	333	738	341	8	3	263	6
Less urbanized, not adjacent	1,048	279	1,101	285	7	2	184	2
Thinly populated, adjacent	81	231	84	225	-6	-3	116	15
Thinly populated, not adjacent	165	297	176	276	-21	-7	221	15

* = statistically significant at .05 level

** = statistically significant at .01 level

NOTE: Metropolitan and non-metropolitan areas based on 1990 Census classification. See Appendix V for complete description of urbanization categories

In 1992, 60 physicians, and in 1993, 63 physicians are omitted from the table because they could not be classified into one of the 10 urbanization categories

SOURCE: HCFA Part B Monitoring System: National Claims History Physician Sample File.

Table XI-4

Mean caseload per physician in 1992 and difference between 1992 and 1993 mean caseload, by race of patient and State

State	White race 1992 Mean Caseload	White race 1992-93 Change in Mean	Black race 1992 Mean Caseload	Black race 1992-93 Change in Mean	Other race 1992 Mean Caseload	Other race 1992-93 Change in Mean	Unknown race 1992 Mean Caseload	Unknown race 1992-93 Change in Mean
TOTAL	285	8 **	24.9	1.2 **	7.8	1.3 **	4	0.5 **
Alabama	330	16	74.9	2.9	6.3	1.7 **	4.9	0.7 **
Alaska	80	4	2.6	0.2	11.9	1.0	1.3	0.5 **
Arizona	306	-7	4.1	0.1	9.2	0.4	3.7	0.8 **
Delaware	293	-3	31.4	0.1	5.9	0.5	4.0	0.3
District of Columbia	143	0	66.3	1.0	8.2	0.8	4.8	0.5
Florida	390	11	21.4	3.1 **	7.9	2.0 **	5.4	0.7
Hawaii	52	-0	0.8	0.0	123.3	-2.1	2.6	0.4 **
Idaho	302	-16	0.5	-0.1	6.3	0.5 *	3.0	0.4 **
Illinois	259	2	30.0	-0.7	6.4	1.2 **	3.2	0.4 **
Indiana	304	9	16.2	0.5	5.1	0.8 **	2.7	0.4 **
Iowa	359	7	3.6	0.1	4.9	0.9 **	4.4	0.8 **
Kansas	318	4	12.6	-0.5	6.3	0.9 **	3.6	0.7 **
Kentucky	324	9	19.1	1.4	6.0	1.4 **	4.2	0.7 **
Louisiana	256	-0	76.1	-0.9	6.8	1.0 **	4.4	0.5 *
Maine	368	-14	0.7	-0.1	6.3	1.1 **	4.4	0.1
Maryland	228	23 **	45.8	10.3 **	4.9	1.3 **	3.4	0.9 **
Massachusetts	287	0	6.0	1.0	5.6	1.1 **	3.9	0.4 *
Montana	324	14	0.5	-0.0	9.0	1.1 **	3.3	0.6 **
Nebraska	384	-7	9.4	-0.6	5.3	0.3	4.7	0.6 **
Nevada	287	10	11.9	1.1 *	10.6	1.7 **	3.6	0.8 **
New Jersey	261	13	21.8	1.0	6.5	1.4 **	3.6	0.7 **
New Mexico	238	6	2.9	0.1	12.3	3.5 **	3.1	0.4 *
New York	228	11 *	18.5	1.5	9.1	1.5 **	3.8	0.6 **
North Carolina	311	-12	62.0	-2.4	7.6	0.7 *	4.2	0.2
North Dakota	386	7	0.4	0.0	7.8	0.9 *	5.4	0.9 **
Ohio	304	17	26.3	2.9	4.0	1.3 **	3.5	0.4 **
Oklahoma	313	20	14.9	0.8	9.9	1.7 **	3.6	0.8 **
Oregon	216	-14 *	1.9	0.0	5.3	0.4	2.4	0.3 *
Pennsylvania	316	0	28.7	-0.9	5.7	0.8 **	3.8	0.4 **
South Carolina	304	-17 *	74.2	-3.2	7.0	0.6 *	4.9	0.1
South Dakota	324	11	0.4	0.1	7.6	0.9 *	4.3	0.7 **
Tennessee	312	16	40.4	2.5	6.2	1.5 **	4.3	0.7 **
Texas	243	24 **	18.5	3.3 **	8.8	2.6 **	3.2	0.6 **
Utah	216	1	0.8	0.1	6.1	0.4	2.4	0.4 **
West Virginia	390	12	11.2	0.4	7.1	1.6 **	4.2	0.4
Wyoming	178	-3	0.9	-0.2	4.2	0.1	1.9	0.2

* = statistically significant at .05 level

** = statistically significant at .01 level

SOURCE: HCFA Part B Monitoring System: National Claims History Physician Sample File.

Table XI-5

Mean allowed charges per physician, change and percent change in mean, and median, for 29 States: 1992-1993

State	1992 Number of Physicians	1992 Mean Allowed Charges	1993 Number of Physicians	1993 Mean Allowed Charges	1992-93 Change in Mean		1992-93 Percent Change in Mean	1993 Median Allowed Charges	1992-93 Percent Change in Median
TOTAL	260,639	$73,934	274,755	$74,982	$1,048	**	1	$35,681	1
Alabama	6,335	$87,280	6,634	$86,583	-697		-1	$47,764	2
Alaska	746	24,573	831	24,341	-233		-1	9,388	-3
Arizona	6,330	77,375	6,802	72,963	-4,412	**	-6	32,221	-8
Delaware	1,131	73,758	1,262	71,941	-1,817		-2	37,498	-9
Florida	25,903	118,580	26,888	121,611	3,031	**	3	64,107	2
Hawaii	2,148	39,640	2,292	39,770	129		0	14,429	-5
Idaho	1,497	50,938	1,598	51,706	768		2	26,736	6
Illinois	20,159	65,876	20,925	66,764	888	*	1	33,653	3
Indiana	9,220	67,952	9,833	67,577	-375		-1	36,217	2
Iowa	4,771	63,304	4,899	64,648	1,343	*	2	36,578	5
Kentucky	5,933	70,714	6,337	71,718	1,004		1	38,358	0
Louisiana	6,714	77,837	7,063	81,851	4,014	**	5	39,608	3
Maine	2,428	52,423	2,612	53,539	1,116		2	28,159	-5
Massachusetts	16,176	49,574	17,447	51,032	1,458	**	3	18,802	5
Montana	1,484	53,361	1,570	52,523	-839		-2	28,400	-2
Nebraska	2,566	67,752	2,703	67,720	-31		-0	33,803	-1
Nevada	1,962	88,800	2,146	86,453	-2,347		-3	40,847	-5
New Jersey	14,511	80,891	15,905	82,327	1,436	**	2	43,037	-2
New Mexico	2,434	46,399	2,608	46,452	53		0	22,107	-0
New York	37,997	70,104	38,966	74,280	4,176	**	6	34,334	9
North Carolina	10,490	67,145	11,213	67,843	697		1	37,663	1
Oklahoma	4,726	69,292	4,940	69,725	433		1	35,331	-2
Oregon	5,317	49,054	5,802	44,766	-4,289	**	-9	22,382	-14
Pennsylvania	26,896	80,497	28,553	80,630	133		0	42,391	-2
South Carolina	4,932	66,248	5,218	68,723	2,475	**	4	37,692	3
Tennessee	8,441	76,488	9,084	74,879	-1,608	**	-2	41,648	-5
Texas	26,046	70,200	27,117	70,709	509		1	30,479	2
Utah	2,581	40,607	2,721	40,366	-241		-1	20,446	-3
Wyoming	765	31,029	786	33,310	2,280	**	7	15,297	12

* = statistically significant at .05 level

** = statistically significant at .01 level

NOTE: All statistics based on 100 percent Part B data.

SOURCE: HCFA Part B Monitoring System: National Claims History UPIN Validation File.

Table XI-6

Mean allowed charges per physician, change and percent change in mean, and median, by specialty group: 1992-93

Specialty (a)	1992 Mean Allowed Charges (b)	1993 Mean Allowed Charges (b)	1992-93 Change in Mean		1992-93 Percent Change in Mean	1993 Median Allowed Charges (c)	1992-93 Percent Change in Median
Primary Care	$40,123	$41,294	$1,171		3	$23,760	18
Family Practice	45,995	47,260	1,265		3	27,027	2
General Practice	42,664	43,540	876		2	26,149	18
Psychiatry	25,425	24,238	-1,187		(5)	27,027	21
Medical Specialties	103,081	110,721	7,640	**	7	70,288	4
Cardiology	168,979	180,460	11,481	*	7	145,077	4
Internal Medicine	85,617	95,185	9,568		11	61,459	10
RAP (d)	85,308	86,034	727		1	54,551	3
Anesthesiology	50,269	50,304	34		0	43,366	1
Radiology	118,659	117,438	1,221		(1)	81,169	9
Surgery	85,058	85,719	660		1	40,523	4
General Surgery	77,020	78,396	1,375		2	61,456	7
Obstetrics/Gynecology	10,723	10,911	188		2	6,056	7
Ophthalmology	230,816	220,775	-10,041		(4)	152,107	2
Orthopedic Surgery	94,172	94,191	19		0	77,771	1
Otolarynology	50,292	49,946	-347		(1)	38,053	8
Podiatry Surgery	50,372	54,117	3,745		7	41,771	7
Urology	154,231	159,957	5,726		4	144,522	8
LLP (e)	8,063	8,061	-2		0	4,286	2
Chiropractic	6,354	6,522	168		3	4,266	7
Optometrist	10,766	10,462	-305		(3)	4,340	9

* = Statistically significant at .05 level

(a) Data from the six broad specialty groups may include physicians in detailed specialties not shown

(b) Means weighted based on estimated Medicare physician populations of the 36 States

(c) Median based on a self-weighting 2% sample from the 36 States.

(d) Subtotal for radiology, anesthesiology, and pathology.

(e) LLP = Limited license practitioners. Oral surgeons and podiatrists are also LLPs but included with surgeons for this analysis

SOURCE: HCFA Part B Monitoring System: National Claims History Physician Sample File.

Table XI-7

Mean allowed charges per physician, change and percent change in mean, and median, by urbanization status: 1992-93

Urbanization Status	1992 Number of Sample Physicians	1992 Mean Allowed Charges	1993 Number of Sample Physicians	1993 Mean Allowed Charges	1992-93 Change in Mean		1992-93 Percent Change in Mean	1993 Median Allowed Charges	1992-93 Percent Change in Median
Metropolitan Counties	12,296	$67,425	12,922	$68,187	$761		1	$29,636	2
Large core	5,294	64,539	5,504	66,596	2,057	*	3	27,489	4
Large fringe	349	61,371	369	64,556	3,185		5	29,521	5
Medium	4,567	70,032	4,843	69,257	-775		-1	30,893	2
Small	2,086	70,056	2,206	70,414	358		1	32,786	4
Non-metropolitan Counties	3,630	52,835	3,761	53,496	661		1	25,098	0
Urbanized, adjacent	541	61,914	551	64,655	2,741	*	4	36,948	10
Urbanized, not adjacent	1,089	58,881	1,111	59,927	1,046		2	26,106	6
Less urbanized, adjacent	706	51,360	738	51,879	519		1	27,871	3
Less urbanized, not adjacent	1,048	45,554	1,101	45,938	384		1	18,850	7
Thinly populated, adjacent	81	30,915	84	30,653	-262		-1	7,465	40
Thinly populated, not adjacent	165	46,491	176	42,928	-3563		-8	27,875	1

* = statistically significant at .05 level

NOTE: Metropolitan and non-metropolitan areas based on 1990 Census classification. See Appendix V for complete description of urbanization categories. In 1992, 61 physicians, and in 1993, 63 physicians are omitted from the table because they could not be classified into one of the 10 categories.

SOURCE: HCFA Part B Monitoring System: National Claims History Physician Sample File.

Table XI-8

Mean assignment rate per physician, change and percent change, and median, for 35 States and the District of Columbia: 1992-93

State	1992 Mean Assignment Rate	1993 Mean Assignment Rate	Change in Mean Assignment Rate		1992-93 Percent Change in Mean	1993 Median Assignment Rate	1992-93 Percent Change in Median
TOTAL	0.82	0.86	0.05	**	6		
Alabama	0.92	0.94	0.02	**	3	1.00	0
Alaska	0.84	0.88	0.04	**	4	1.00	0
Arizona	0.78	0.85	0.06	**	8	1.00	0
Delaware	0.86	0.89	0.04	**	4	1.00	0
District of Columbia	0.83	0.86	0.03	*	3	1.00	0
Florida	0.83	0.89	0.06	**	7	1.00	0
Hawaii	0.92	0.94	0.02	**	3	1.00	0
Idaho	0.49	0.58	0.09	**	19	0.58	67
Illinois	0.78	0.83	0.06	**	7	1.00	0
Indiana	0.79	0.84	0.06	**	8	1.00	0
Iowa	0.72	0.82	0.10	**	14	1.00	0
Kansas	0.86	0.89	0.03	**	4	1.00	0
Kentucky	0.83	0.88	0.06	**	7	1.00	0
Louisiana	0.81	0.87	0.05	**	6	1.00	0
Maine	0.92	0.95	0.02	**	3	1.00	0
Maryland	0.90	0.91	0.01		1	1.00	0
Massachusetts	0.97	0.97	0.00		0	1.00	0
Montana	0.57	0.69	0.12	**	21	1.00	105
Nebraska	0.74	0.82	0.08	**	11	1.00	0
Nevada	0.91	0.91	0.00		0	1.00	0
New Jersey	0.73	0.76	0.04	**	5	1.00	0
New Mexico	0.78	0.82	0.04	**	6	1.00	0
New York	0.76	0.80	0.03	**	4	1.00	0
North Carolina	0.81	0.86	0.06	**	7	1.00	0
North Dakota	0.66	0.68	0.02		3	1.00	0
Ohio	0.87	0.94	0.07	**	8	1.00	0
Oklahoma	0.71	0.79	0.08	**	12	1.00	0
Oregon	0.69	0.77	0.08	**	11	1.00	0
Pennsylvania	0.93	0.96	0.03	**	3	1.00	0
South Carolina	0.81	0.84	0.04	**	4	1.00	0
South Dakota	0.40	0.48	0.08	**	20	0.30	14
Tennessee	0.84	0.89	0.04	**	5	1.00	0
Texas	0.76	0.82	0.06	**	7	1.00	0
Utah	0.84	0.89	0.05	**	6	1.00	0
West Virginia	0.94	0.94	0.00	**	0	1.00	0
Wyoming	0.61	0.69	0.08	**	13	1.00	2

* = statistically significant at .05 level

** = statistically significant at .01 level

SOURCE: HCFA Part B Monitoring System: National Claims History Physician Sample File.

Table XI-9

Mean assignment rate per physician and difference in mean between 1992 and 1993, by race of patient and State

State	White race		Black race		Other race		Unknown race	
	Mean Assignment Rate, 1992	1992-93 Change in Mean	Mean Assignment Rate, 1992	1992-93 Change in Mean	Mean Assignment Rate, 1992	1992-93 Change in Mean	Mean Assignment Rate, 1992	1992-93 Change in Mean
Alabama	0.91	0.03 **	0.95	0.02 *	0.93	0.02 **	0.93	0.02 *
Alaska	0.83	0.04 **	0.91	0.01	0.91	0.00	0.87	0.04 **
Arizona	0.78	0.07 **	0.86	0.02 *	0.82	0.06 **	0.80	0.05 **
Delaware	0.85	0.04 **	0.88	0.04 **	0.84	0.05 **	0.88	0.02
District of Columbia	0.82	0.03 *	0.90	0.02	0.87	0.02	0.87	0.02 *
Florida	0.83	0.06 **	0.92	0.03 **	0.87	0.04 **	0.85	0.07 **
Hawaii	0.91	0.03 **	0.91	0.06 **	0.93	0.02 **	0.95	0.00
Idaho	0.48	0.09 **	0.58	0.14 **	0.54	0.08 **	0.45	0.15 **
Illinois	0.77	0.06 **	0.86	0.05 **	0.82	0.06 **	0.77	0.09 **
Indiana	0.78	0.06 **	0.87	0.05 **	0.83	0.05 **	0.83	0.03 *
Iowa	0.71	0.10 **	0.84	0.04 **	0.77	0.08 **	0.69	0.11 **
Kansas	0.86	0.03 **	0.94	0.02 **	0.90	0.01	0.89	0.02 **
Kentucky	0.82	0.06 **	0.90	0.03 **	0.87	0.04 **	0.85	0.05 **
Louisiana	0.81	0.05 **	0.88	0.03 **	0.86	0.03 **	0.84	0.05 **
Maine	0.92	0.02 **	0.97	0.01	0.95	0.02 *	0.93	0.03 **
Maryland	0.90	0.01	0.94	0.01	0.91	0.02	0.90	0.02 *
Massachusetts	0.97	0.00	0.99	0.00	0.98	0.00	0.98	-0.01 *
Montana	0.56	0.12 **	0.69	0.06 **	0.69	0.09 **	0.54	0.12 **
Nebraska	0.74	0.08 **	0.84	0.07 **	0.78	0.07 **	0.73	0.07 **
Nevada	0.91	0.00	0.95	0.02 **	0.94	0.00	0.92	0.02 *
New Jersey	0.72	0.04 **	0.81	0.03 **	0.75	0.03 *	0.74	0.05 **
New Mexico	0.78	0.04 **	0.86	0.03 *	0.84	0.04 **	0.79	0.05 **
New York	0.76	0.03 **	0.87	0.02 *	0.83	0.03 **	0.80	0.03 **
North Carolina	0.80	0.06 **	0.88	0.03 **	0.84	0.05 **	0.84	0.04 **
North Dakota	0.65	0.02	0.71	-0.06 *	0.77	-0.03	0.63	-0.01
Ohio	0.87	0.07 **	0.91	0.06 **	0.89	0.08 **	0.89	0.07 **
Oklahoma	0.70	0.09 **	0.80	0.07 **	0.76	0.04 **	0.70	0.07 **
Oregon	0.69	0.08 **	0.84	0.01	0.71	0.09 **	0.69	0.08 **
Pennsylvania	0.93	0.03 **	0.97	0.01 *	0.95	0.02 **	0.96	0.01
South Carolina	0.80	0.04 **	0.86	0.03 *	0.82	0.05 **	0.82	0.01
South Dakota	0.39	0.08 **	0.36	0.15 **	0.50	0.08 **	0.39	0.08 **
Tennessee	0.84	0.04 **	0.89	0.03 **	0.88	0.03 **	0.85	0.06 **
Texas	0.76	0.06 **	0.86	0.05 **	0.82	0.04 **	0.79	0.04 **
Utah	0.84	0.05 **	0.87	0.04 **	0.85	0.06 **	0.83	0.06 **
West Virginia	0.94	0.01	0.96	0.02 *	0.95	-0.01	0.94	0.01
Wyoming	0.61	0.08 **	0.78	0.04	0.71	0.06 **	0.63	0.07 **

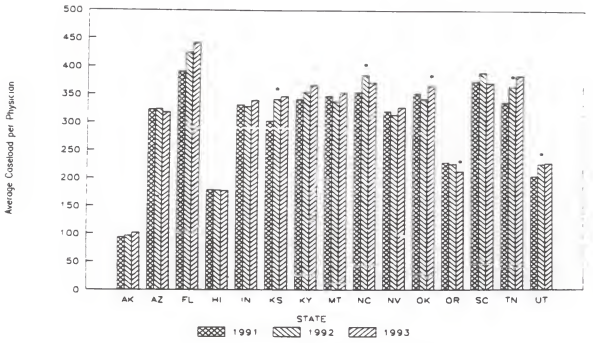
* = statistically significant at .05 level

** = statistically significant at .01 level

SOURCE: HCFA Part B Monitoring System: National Claims History Physician Sample File.

Figure 2

1991-93 Average Caseload by State And Annual Average Growth Rate



ANNUAL AVERAGE GROWTH RATES:

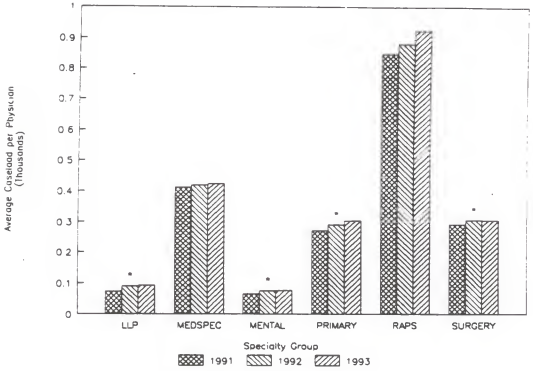
AK	AZ	FL	HI	IN	KS	KY	MT	NC	NV	OK	OR	SC	TN	UT
4%	-1%	6%	-1%	1%	7%	4%	1%	3%	1%	2%	-4%	-0%	7%	5%

*=change from previous year is statistically significant at .05 or .01 level

Source: HCFA Part B Monitoring System: National Claims History Physician Sample File

Figure 3

1991-93 Average Caseload by Specialty And Annual Average Growth Rate



ANNUAL AVERAGE GROWTH RATES:

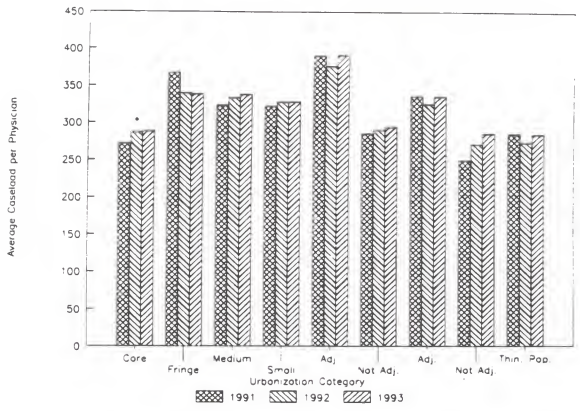
LLP	MEDICAL SPECIALTIES	MENTAL HEALTH	PRIMARY CARE	RAPS	SURGERY
12%	1%	8%	6%	4%	2%

*=change from previous year is statistically significant at .05 or .01 level

Source: HCFA Part B Monitoring System: National Claims History Physician Sample File

Figure 4

1991-93 Average Caseload by Urbanization Category And Annual Average Growth Rate



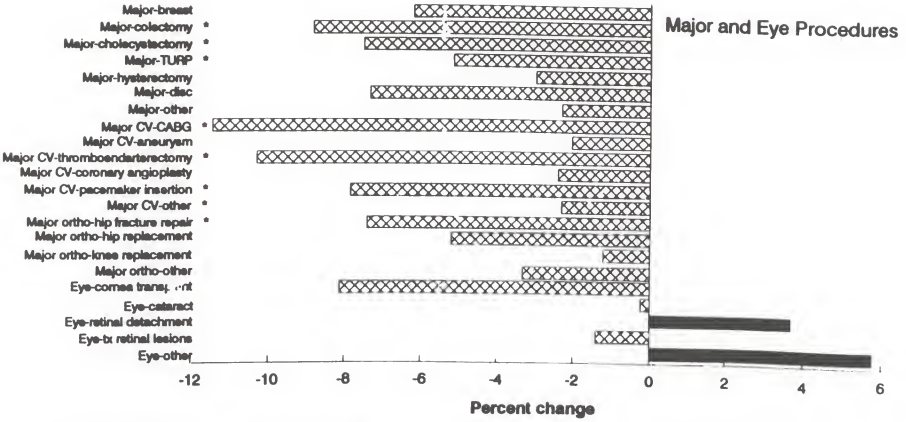
ANNUAL AVERAGE GROWTH RATES:

Metropolitan				Non-metropolitan				
				Urbanized		Less Urbanized		Thinly
Core	Fringe	Medium	Small	Adj.	Not Adj.	Adj.	Not. Adj.	Populated
3%	-4%	2%	1%	0%	2%	-0%	7%	0%

*=change from previous year is statistically significant at .05 or .01 level

Source: HCFA Part B Monitoring System: National Claims History Physician Sample File

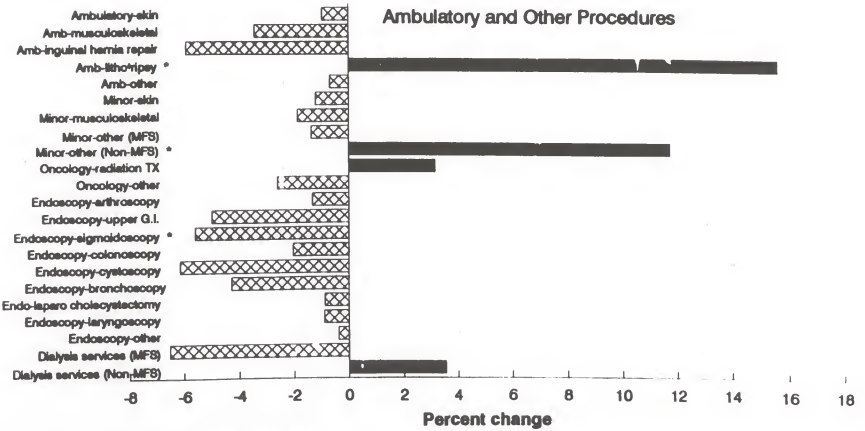
Figure 5
Percent change in number of physicians performing each type of procedure: 1992 - 1993



SOURCE: National Claims History Physician Sample File.

*=Test of 1992 - 1993 difference in proportion of physicians performing the procedure is significant at .01 level.

Figure 6
Percent change in number of physicians performing each type of procedure: 1992 - 1993

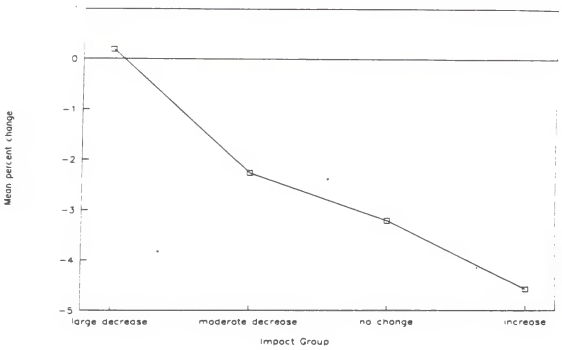


SOURCE: National Claims History Physician Sample File.

*=Test of 1992 - 1993 difference in proportion of physicians performing the procedure is significant at .01 level.

Figure 7

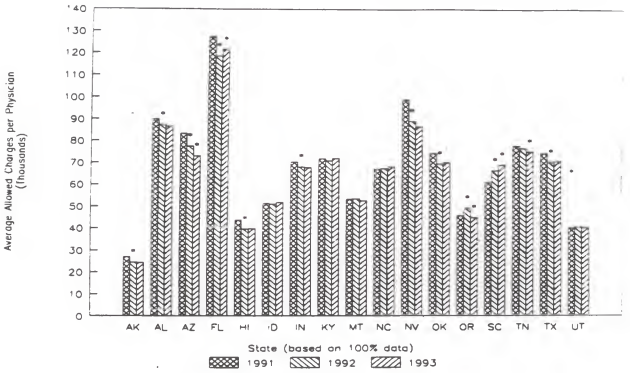
Mean percent change in surgery performers by impact group



Source: HCFA Part B Monitoring System: National Claims History Physician Sample File

Figure 8

1991-1993 Average Allowed Charges by State And Annual Average Growth Rate



ANNUAL AVERAGE GROWTH RATES:

AK	AL	AZ	FL	HI	ID	IN	KY	MT
-5%	-2%	-6%	-2%	-5%	0%	-2%	0%	-1%

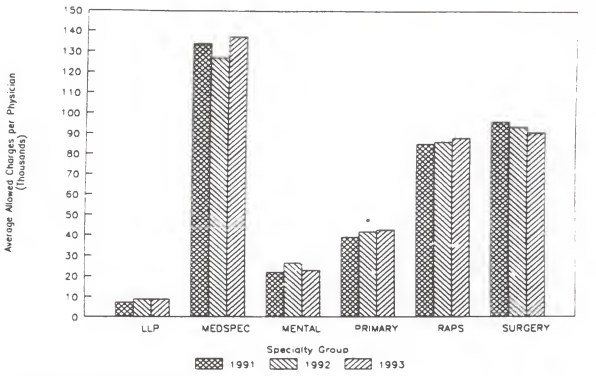
NC	NV	OK	OR	SC	TN	TX	UT
1%	-6%	-3%	-1%	6%	-2%	-2%	0%

*=change from previous year is statistically significant at .05 or .01 level

Source: HCFA Part B Monitoring System: National Claims History Physician Sample File

Figure 9

1991-93 Average Allowed Charges by Specialty And Annual Average Growth Rate



ANNUAL AVERAGE GROWTH RATES:

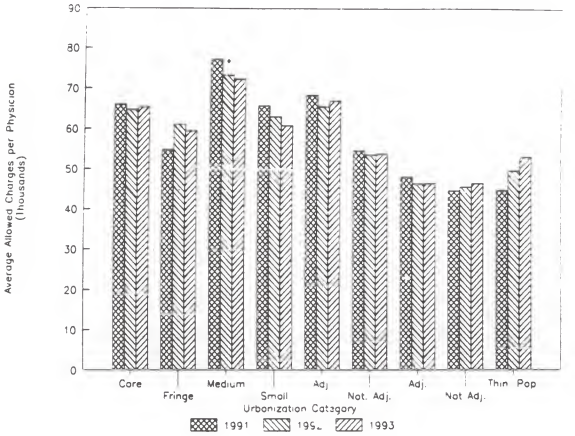
LLP	MEDICAL SPECIALTIES	MENTAL HEALTH	PRIMARY CARE	RAPS	SURGERY
10%	1%	2%	4%	2%	-3%

* =change from previous year is statistically significant at .05 or .01 level

Source: HCFA Part B Monitoring System: National Claims History Physician Sample File

Figure 10

1991-93 Average Allowed Charges by Urbanization Category And Annual Average Growth Rate



ANNUAL AVERAGE GROWTH RATES:

Metropolitan				Non-metropolitan				
				Urbanized		Less Urbanized		Thinly
Core	Fringe	Medium	Small	Adj.	Not Adj.	Adj.	Not. Adj.	Populated
-0%	4%	-3%	-4%	-1%	-1%	-2%	2%	9%

*=change from previous year is statistically significant at .05 or .01 level

Source: HCFA Part B Monitoring System: National Claims History Physician Sample File

Technical Note A

Technical Note A

Number of physicians in the study, by State: 1991-1993

State	Number of Physicians (a)		
	1991	1992	1993
Alabama		383	399
Alaska	320	362	390
Arizona	559	629	659
Delaware		294	321
District of Columbia		327	329
Florida	504	551	578
Hawaii	353	397	413
Idaho		341	375
Illinois		655	671
Indiana	462	495	512
Iowa		492	508
Kansas	600	643	649
Kentucky	331	367	374
Louisiana		490	515
Maine		340	376
Maryland		467	480
Massachusetts		540	558
Montana	349	377	375
Nebraska		462	485
Nevada	326	400	418
New Jersey		478	501
New Mexico		416	451
New York		819	842
North Carolina	403	414	452
North Dakota		287	291
Ohio		383	417
Oklahoma	375	409	423
Oregon	397	443	477
Pennsylvania		595	610
South Carolina	338	356	400
South Dakota		307	314
Tennessee	407	440	467
Texas		568	585
Utah	406	444	464
Virginia		118	113
West Virginia		374	415
Wyoming		242	252

(a) Physicians include doctors of medicine, osteopathy, dental surgery, dental medicine, and optometry; chiropractors, and podiatrists.

Technical Note B

Caseload Change in Relation to Price Change per Service

This Technical Note shows the results of a linear regression on the 36 State mean caseloads (Table XI-B-1) The regression was also performed on the data for 14,686 physicians with both 1992 and 1993 observations (Table XI-B-2).

The percent change in mean caseload was regressed on the State-level estimates of the expected 1991-96 total percent change in average price per service. The price change estimates were produced by HCFA in 1991 and represent the price change relative to a continuation of the former reasonable charge system. The percent change in non-HMO enrollment was entered in the regression, to control for change in the population at risk of seeking Medicare fee-for-service physician care. The intercept in this model represents a time trend variable, to control for other, nonspecific causes of caseload growth.

The State-level regression explains 19 percent of the variation in State mean caseload (Table XI-B-1). While the estimated price elasticity of -.24 percent is statistically significant, the regression coefficients for time trend and enrollment change are not; nevertheless, the size and signs of these coefficients suggest that caseload change might rise for reasons other than price change.

We found a similar, though statistically weaker, estimate of the price elasticity from a regression of the individual caseload changes (from the physicians with two observations). This regression used physician-level measurements only for the caseload change. The independent variables were again measured at the State level (using the State in which the physician submitted claims to Medicare). All variables were expressed as a difference in logarithms of the original variables.

The proportion of variation explained using the microdata is much lower: .06 percent. With extremely large sample sizes, there tends to be a great deal of unexplained variation, but usually the F-statistic is stronger than the F-statistic shown here (F=4.065). As with the State model, the price elasticity, estimated at -.18, is statistically significant. The enrollment change elasticity, .82, is significant at the 10 percent level.

Variables for the physician's specialty (using the six broad specialty groups) were added in an alternative estimation of the model (data not shown). These variables were intended to capture specialty-related alterations in both the responsiveness of caseload to price and in the time trend of caseload. But they did not improve the model (F= 1.538, prob. .1027). This may mean that caseload change was not related to specialty after controlling for price and enrollment change. (For 15 detailed specialties, a plot of the specialty-specific caseload change vs. the estimated 1992-96 price change suggested no relationship. [See Federal Register 57(228): 55993 for the price change data.]) Alternatively, it may simply reflect the large amount of measurement error affecting the model. The very small F-statistic, given the sample size, suggests that the regression needs further development and better measurement.

Table XI-B-1

Regression estimate of elasticity of caseload with respect to price change State-level data

Variable	Elasticity	Standard Error	Prob.
Time trend	0.3092	1.0815	0.7768
Price change, 1991-96	-0.2378	0.0952	0.0176
Enrollment change	0.4095	0.4634	0.3833

N=36 F = 3.883 Prob. 0.0306

R-square=0.1905 Adjusted R-square=0.1415

Table XI-B-2

Regression estimate of elasticity of caseload with respect to price change: Physician-level data*

Variable	Elasticity	Standard Error	Prob.
Time trend	0.0087	0.0106	0.4134
Price change, 1991-96	-0.1828	0.0907	0.0439
Enrollment change	0.8163	0.4767	0.0868

N=14,686 F = 4.065 Prob. 0.0172

R-square=0.0006 Adjusted R-square=0.0004

* Regression uses physician-level data on caseload change from physicians observed in both 1992 and 1993. Price change and enrollment change were measured for States. All variables were expressed as a difference in the logs of the original variables. See text for further description.

Technical Note C

Analysis of Performance Rates

The accompanying tables report on changes in the physicians' performance of surgical and diagnostic procedures for 44 categories of services. Table XI-C-1 shows the number of physicians who performed at least one procedure in any capacity--i.e., as an assistant at surgery or as a primary performer--by year and procedure category. Table XI-C-2 shows the number of physicians who performed as a primary performer, regardless of whether the physician also performed as an assistant, by year and category. Tables C-1 and C-2 are based on physicians with allowed charges in both 1992 and 1993. Table XI-C-3 shows the any-capacity performance data for all physicians in the study.

Figures C-1 and C-2 depict 1990-1993 trends in hospital discharge rates for selected inpatient surgical procedures. The data were developed for the analysis in this volume's Appendix entitled "Monitoring Part A."

Table C-1
Number of physicians (a) performing surgery in any surgical capacity, by procedure group: 1992-93 (paired sample)

	Number of surgeons		Change		Percent
	1992	1993	(1992-93)		Change
Major Procedure: General					
Breast	778	730	-48		-6
Colectomy	1001	913	-88	**	-9
Cholecystectomy	884	818	-66	**	-7
TURP	273	259	-14		-5
Hysterectomy	946	918	-28		-3
Disk Surgery	397	368	-29		-7
Other	4990	4876	-114	**	-2
Major Procedure: Cardiovascular					
CABG	149	132	-17		-11
Aneurysm Repair	344	337	-7		-2
Thromboendarterectomy	389	349	-40	**	-10
PTCA (b)	210	205	-5		-2
Pacemaker Insertion	639	589	-50	**	-8
Other	3194	3121	-73		-2
Major Procedure: Orthopedic					
Hip Fracture Repair	785	727	-58	**	-7
Hip Replacement	617	585	-32		-5
Knee Replacement	585	578	-7		-1
Other	1817	1757	-60		-3
Major Procedure: Eye					
Corneal Transplant	111	102	-9		-8
Cataract Removal/Lens Insertion	436	435	-1		-0
Retinal Detachment	162	168	6		4
Treatment of Retinal Lesions	216	213	-3		-1
Other	557	589	32		6
Ambulatory Procedure:					
Skin	4014	3975	-39		-1
Musculoskeletal	2169	2095	-74		-3
Hernia Repair	916	862	-54	**	-6
Lithotripsy	174	201	27	**	16
Other	5366	5329	-37		-1
Minor Procedure:					
Skin	5475	5408	-67		-1
Musculoskeletal	4549	4464	-85		-2
Other (MFS)	8385	8270	-115		-1
Other (Non-MFS)	2925	3267	342	**	12
Oncology					
Radiation Therapy	191	197	6		3
Other	655	638	-17		-3
Endoscopy					
Arthroscopy	447	441	-6		-1
Upper G.I. Endoscopy	861	818	-43	**	-5
Sigmoidoscopy	2182	2060	-122	**	-6
Colonoscopy	687	673	-14		-2
Cystoscopy	391	367	-24		-6
Bronchoscopy	537	514	-23		-4
Laparoscopic Cholecystectomy	797	790	-7		-1
Laryngoscopy	442	438	-4		-1
Other	2341	2332	-9		-0
Dialysis Service					
(MFS)	138	129	-9		-7
(Non-MFS)	113	117	4		4

** = change in performance rate is statistically significant at .01 level

(a) Includes physicians performing at least once during the year as either assistant or primary surgeon or both

(b) PTCA = Percutaneous transluminal coronary angioplasty

SOURCE: HCFA Part B Monitoring System: National Claims History Physician Sample File.

Table C-2
Number of physicians serving as primary surgeon,
by procedure group: 1992-93 (paired sample)

	Number of surgeons		Change		Percent
	1992	1993	(1992-1993)		Change
Major Procedure: General					
Breast	556	535	-21		-4
Colectomy	627	597	-30		-5
Cholecystectomy	587	559	-28		5
TURP	273	259	-14		-5
Hysterectomy	663	631	-32		-5
Disk Surgery	286	262	-24		-8
Other	4635	4542	-93		-2
Major Procedure: Cardiovascular					
CABG	103	91	-12		-12
Aneurysm Repair	222	227	5		2
Thromboendarterectomy	239	214	-25	**	-10
PTCA (a)	210	205	-5		-2
Pacemaker Insertion	633	585	-48	**	-8
Other	3094	3036	-58		-2
Major Procedure: Orthopedic					
Hip Fracture Repair	525	494	-31	**	-6
Hip Replacement	429	399	-30	**	-7
Knee Replacement	393	405	12		3
Other	1644	1604	-40		-2
Major Procedure: Eye					
Corneal Transplant	97	87	-10		-10
Cataract Removal/Lens Insertion	424	433	9		2
Retinal Detachment	151	154	3		2
Treatment of Retinal Lesions	216	213	-3		-1
Other	550	583	3		6
Ambulatory Procedure:					
Skin	4009	3971	-38		-1
Musculoskeletal	2115	2046	-69		-3
Hernia Repair	688	669	-19		-3
Lithotripsy	174	201	27	**	16
Other	5256	5221	-35		-1
Minor Procedure:					
Skin	5475	5407	-68		-1
Musculoskeletal	4549	4464	-85		-2
Other (MFS)	8384	8269	-115		-1
Other (Non-MFS)	2925	3267	342	**	12
Oncology					
Radiation Therapy	191	197	6		3
Other	655	638	-17		-3
Endoscopy					
Arthroscopy	432	427	-5		-1
Upper G.I. Endoscopy	859	818	-41		-5
Sigmoidoscopy	2182	2060	-122	**	-6
Colonoscopy	686	673	-13		-2
Cystoscopy	390	367	-23		-6
Broncoscopy	537	514	-23		-4
Laparoscopic Cholecystectomy	520	521	1		0
Laryngoscopy	442	438	-4		-1
Other	2321	2288	-33		-1
Dialysis Service					
(MFS)	138	129	-9		-7
(Non-MFS)	113	117	4		4

** = change in performance rate is statistically significant at .01 level
(a) PTCA = Percutaneous transluminal coronary angioplasty
SOURCE: HCFA Part B Monitoring System: National Claims History Physician Sample File.

Table C-3

Surgery performers and performance rates, by procedure group: 1992-93 (all sample physicians)

	1992		1993			Change in Rate
	No. of Surgeons	Rate per 1,000	No. of Surgeons	Rate per 1,000		
Major Procedure: General						
Breast	798	49.9	755	45.1		-4.8
Colectomy	1,025	64.1	956	57.1	**	-7.0
Cholecystectomy	902	56.4	858	51.2	**	-5.2
TURP	276	17.3	271	16.2		-1.1
Hysterectomy	968	60.5	978	58.4		-2.1
Disk Surgery	405	25.3	394	23.5		-1.8
Other	5,138	321.4	5,281	315.4		-6.0
Major Procedure: Cardiovascular						
CABG	157	9.8	141	8.4	**	-1.4
Aneurysm Repair	359	22.5	356	21.3		-1.2
Thromboendarterectomy	397	24.8	370	22.1	**	-2.7
PTCA (a)	214	13.4	224	13.4		0.0
Pacemaker Insertion	658	41.2	634	37.9	**	-3.3
Other	3,299	206.4	3,433	205.0		-1.4
Major Procedure: Orthopedic						
Hip Fracture Repair	804	50.3	773	46.2	**	-4.1
Hip Replacement	631	39.5	617	36.8		-2.7
Knee Replacement	598	37.4	606	36.2		-1.2
Other	1,862	116.5	1,881	112.3		-4.2
Major Procedure: Eye						
Corneal Transplant	114	7.1	113	6.7		-0.4
Cataract Removal/Lens Insertion	449	28.1	468	27.9		-0.2
Retinal Detachment	167	10.4	181	10.8		0.4
Treatment of Retinal Lesions	218	13.6	239	14.3		0.7
Other	582	36.4	636	38.0		1.6
Ambulatory Procedure:						
Skin	4,136	258.7	4,208	251.3	**	-7.4
Musculoskeletal	2,224	139.1	2,244	134.0		-5.1
Hernia Repair	943	59.0	896	53.5	**	-5.5
Lithotripsy	176	11.0	210	12.5	**	1.5
Other	5,511	344.7	5,718	341.5		-3.2
Minor Procedure:						
Skin	5,696	356.3	5,841	348.8		-7.5
Musculoskeletal	4,702	294.1	4,797	286.5	**	-7.6
Other (MFS)	8,700	544.2	8,938	533.7	**	-10.5
Other (Non-MFS)	2,991	187.1	3,451	206.1	**	19.0
Oncology						
Radiation Therapy	200	12.5	215	12.8		0.3
Other	671	42.0	661	39.5		-2.5
Endoscopy						
Arthroscopy	452	28.3	467	27.9		-0.4
Upper G.I. Endoscopy	893	55.9	865	51.7	**	-4.2
Sigmoidoscopy	2,242	140.2	2,152	128.5	**	-11.7
Colonoscopy	713	44.6	713	42.6		-2.0
Cystoscopy	398	24.9	390	23.3		-1.6
Broncoscopy	548	34.3	553	33.0		-1.3
Laparoscopic Cholecystectomy	815	51.0	827	49.4		-1.6
Laryngoscopy	452	28.3	461	27.5		-0.8
Other	2,401	150.2	2,493	148.9		-1.3
Dialysis Service						
(MFS)	140	8.8	136	8.1		-0.7
(Non-MFS)	115	7.2	122	7.3		0.1

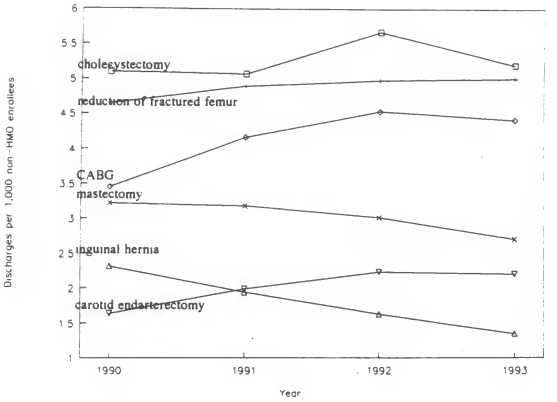
** = Change in performance rate is statistically significant at .01 level

(a) PTCA = Percutaneous transluminal coronary angioplasty

SOURCE: HCFA Part B Monitoring System: National Claims History Physician Sample File.

Figure C-1

Hospital Inpatient Discharge Rates, 1990-93, For Selected Procedures

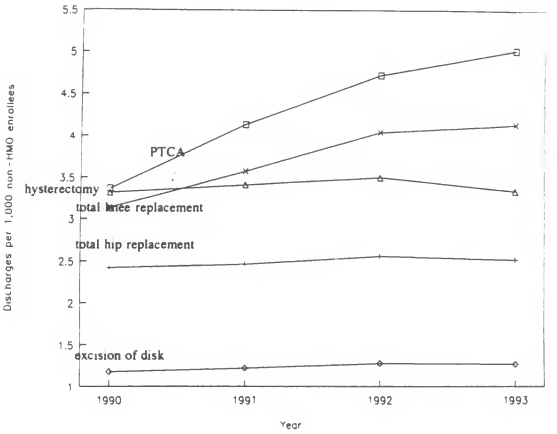


NOTE: CABG=coronary artery bypass graft

Source: Medicare Provider Analysis and Review File

Figure C-2

Hospital Inpatient Discharge Rates, 1990-93, For Selected Procedures



NOTE: PTCA=percutaneous transluminal coronary angioplasty

Source: Medicare Provider Analysis and Review File

Technical Note D

Average Allowed Charges per Physician in the 36-State Sample

Based on the sample data, the average allowed charges per physician increased 3 percent between 1992 and 1993, from $69,286 to $71,281 (see Table XI-D-1). For physicians in most States, allowed charges did not change significantly on average. Three States--Maryland, New Jersey, and Texas--had growth between 6 percent and 10 percent, amounting to absolute increases at least twice the $2,000 norm. These States were also among the five States with caseload increases. Another three States had significant losses in average allowed charges; these were Arizona, Oregon, and Idaho, with declines of $3,903, $4,434, and $2,961, respectively. Oregon was the only State with reduced caseload.

As with caseload, a few States had median changes suggestive of actual shifts. In South Carolina, which had a statistically borderline caseload decline, as well as in West Virginia, the median dropped about $4,000, or roughly 10 percent. In Maine, the median declined $5,000, or 17 percent. Both the means and medians are highly variable among the States, due to a range of factors including geographic price index variation.

Table D-1

Mean allowed charges per physician, change and percent change in mean, and median, for 35 States and the District of Columbia: 1992-93

State	1992 Mean Allowed Charges	1993 Mean Allowed Charges	1992-93 Change in Mean		1992-93 Percent Change in Mean	1993 Median Allowed Charges	1992-93 Percent Change in Median
TOTAL (a)	$69,286	$71,281	$1,995	*	3	$31,344	6
Alabama	87,062	87,680	$ 618		1	47,806	6
Alaska	20,553	21,208	655		3	8,790	1
Arizona	70,931	67,028	-3,903	*	-6	27,300	6
Delaware	71,286	69,982	-1,305		-2	31,880	3
District of Columbia	54,302	54,226	-76		-0	20,703	-6
Florida	104,876	114,121	9,244		9	50,884	5
Hawaii	41,531	41,577	45		0	12,638	-3
Idaho	51,623	48,662	-2,961	*	-6	19,789	-12
Illinois	64,978	67,091	2,113		3	31,406	1
Indiana	73,759	72,846	-913		-1	36,257	3
Iowa	56,810	58,370	1,561		3	32,690	-0
Kansas	73,441	72,354	-1,087		-1	29,181	1
Kentucky	67,954	68,123	169		0	37,615	4
Louisiana	72,328	76,006	3,678		5	36,755	6
Maine	51,893	52,194	302		1	24,850	-17
Maryland	62,858	68,120	5,262	*	8	35,678	27
Massachusetts	57,473	59,220	1,747		3	23,775	16
Montana	57,380	58,349	969		2	27,879	0
Nebraska	64,626	62,585	-2,041		-3	33,609	-4
Nevada	81,904	82,896	992		1	34,658	-1
New Jersey	69,221	76,243	7,022	*	10	38,111	9
New Mexico	40,572	40,023	-550		-1	17,624	-1
New York	72,741	75,317	2,576		4	33,509	10
North Carolina	60,045	57,232	-2,813		-5	36,291	-3
North Dakota	66,546	66,164	-383		-1	33,251	6
Ohio	64,917	64,098	-819		-1	42,065	10
Oklahoma	63,555	65,737	2,182		3	27,670	-5
Oregon	41,359	36,925	-4,434	*	-11	16,301	-10
Pennsylvania	73,243	74,138	895		1	34,158	14
South Carolina	67,919	65,626	-2,293		-3	36,790	-10
South Dakota	65,182	68,806	3,624		6	30,198	3
Tennessee	73,377	73,505	128		0	39,683	-0
Texas	61,852	65,809	3,957	*	6	23,326	12
Utah	35,856	36,324	469		1	17,072	0
West Virginia	75,208	74,282	-925		-1	33,361	-10
Wyoming	29,123	31,685	2,562		9	14,159	12

* = statistically significant at .05 level

** = statistically significant at .01 level

(a) Means for Total weighted based on estimated Medicare physician populations of the 36 States. Median for Total based on a self-weighting 2 percent sample from the 36 States.

SOURCE: HCFA Part B Monitoring System: National Claims History Physician Sample File.

Acknowledgments

The author wishes to thank Charlotte A. Smith for assisting in table production. James Beebe provided valuable statistical advice. Evelyn Rabey prepared the summary records from the Part B Physician Sample data base.

Notes

1. Appendix VIII, "Access to Care Before and After Fee Schedule Implementation: A Physician-based Analysis." In: Health Care Financing Administration. Report to Congress: Monitoring the Impact of Medicare Physician Payment Reform on Utilization and Access 1994. HCFA Pub. No. 03358. September 1994.

2. Repeated observation of the same unit tends to improve the reliability of statistical comparisons across time. Yet measurements on all the sampled physicians should provide the best estimate of the mean for the physician population we wish to study: all physicians in Medicare practice in a given year. We sought to capitalize on the efficiency of repeated observations on the 14,686 physicians contributing data in both 1992 and 1993, while retaining information from the physicians having only one observation. Therefore, the approach to statistical testing is a comparison of annual means, using a t-test incorporating a covariance adjustment to the standard error of the difference between means.

3. Three of the States included in last year's report--Alabama, Texas, and Idaho--had to be withdrawn from the 3-year analysis in this appendix, due to difficulties in sampling the 1991 National Claims History correctly. The States will be reinstated in next year's longitudinal analyses.

4. UPIN is an acronym for "Unique Physician Identification Number." Medicare began phasing in the identifiers in late 1989 under provisions of the Omnibus Budget Reconciliation Act of 1985 (PL 99-272), now section 1842(r) of the Social Security Act. Through the use of unique identifiers, the legislation sought to prevent Part B payment to residents and interns in the teaching hospital setting.

5. This file also allowed us to assess the variability in allowed charges, which is used as the basis for determining the State sample size required.

6. The 1992 and 1993 Part B Physician Sample files are available for public use. Physician and beneficiary identifiers on the public use versions are scrambled to ensure privacy.

7. The sample is random, assuming that the terminal digits of the UPIN, which are used to select sample members, are uniformly and randomly distributed among Medicare's physicians. All physicians who bill Medicare or who may be referenced as referring/ordering physicians on Part B claims are supposed to apply for a UPIN. The assumption that the terminal digit pairs of the UPIN are uniformly distributed has been tested and confirmed, and we have no reason to believe that the assignment of the terminal digits is not random. The sampling methodology relying on terminal digits has been used for Medicare's beneficiary sample for many years.

8. Among possible reasons for completely absent claims are that the physician may not have treated any Medicare patients during the year, the physician is no longer in practice, the Part

B carrier failed to code the UPIN on the claims, or the physician did not have a UPIN during the year. The first two reasons have significance for studying the access impacts of the MFS, because complete withdrawal from the Medicare market or the profession is a possible physician response. Ideally, physicians who withdrew from the Medicare market would be included with zero values in the computations of caseload means and other measures.

9. Carriers have been known to experience occasional periods of electronic systems failures which result in claims entering the National Claims History without a UPIN. Carrier error in claims processing is another possible reason for missing UPINs. We have no information suggesting that large-scale processing failures were more prevalent in one year than another for the 35 States and the District of Columbia in 1992-93 analysis, or the subset of 15 states in the 1991-92 analysis. Results of Medicare's UPIN monitoring in 1994 suggested a small upward shift in the proportion of physician claims reporting a UPIN. For the States in the study, 97.4 percent and 98.2 percent of allowed charges were associated with UPIN-bearing claims in 1992 and 1993, respectively. It is difficult to assess the significance of this finding, because of technical problems in ascertaining the correct denominator. One possibility, of course, is that UPIN reporting improved marginally. It seems unlikely that this would significantly bias the results of the analyses.

10. There would have been 717, 1,003, and 784 more physicians in 1991, 1992, and 1993, respectively, if the deletions had not been made.

11. In some instances, technical difficulties in monitoring UPIN reporting prevented identifying several additional states in time for the commencement of the access analysis. We expect those States can be included in next year's analysis.

12. The small number of beneficiaries each year with more than one race among their claims was assigned to the "unknown" race category.

13. We could not use an expanded racial classification system begun in 1993 in part because the primary aim of the analyses was to make comparisons between 1993 and the prior two years, when the expanded classification was not used.

14. Physicians with multiple specialties shown among their claims were assigned to their specialty of highest reimbursement. However, if the resulting specialty was "multiple specialty group" or "unknown" a specialty was found by matching the UPIN against the national UPIN Registry file.

15. Appendix V to this volume provides further description of the urban/rural classification scheme.

16. The ZIP code on the claim should be associated with the office where the service was performed, but sometimes it is the ZIP code of the billing office. The ZIP code was used to assign the summary record to a county, and then each county was mapped to one of the ten urban/rural categories. About three-quarters of the physicians practiced in only one ZIP code within a year; another 18 percent practiced in two within a year. The physician was classified

in the urban/rural category with the highest allowed charges over all of the physician's records for the year. In 1992, 2,224 physicians practiced in more than one urban/rural category, and in 1993, 3,214 did so. In cases where the urban/rural classification changed from one year to another, the physician was assigned to the one with the highest allowed charges. Two percent of the 14,686 physicians present in both 1992 and 1993 had to be forced into a single category.

17. This method estimates a covariance term from the paired data, for use in the standard error computation. For a description, see Kish, Leslie. Survey Sampling. New York: John Wiley & Sons, 1965. Weighted means incorporating the covariance adjustments were used in the analyses by specialty.

18. Federal Register 56 (227):59619-59621. November 25, 1991. The price change was the difference between the estimated fee schedule value for 1996 and the average price per service that was projected for 1996 under the old reasonable-charge system. The 1989 distribution of services was used to compute the forecast.

19. Our significance criterion was the two-tailed 5 percent level unless tests were repeated many times, in which case the criterion was the 1 percent level.

20. Complete test results are available from the Office of Research and Demonstrations upon request.

21. Hereinafter, we include the District of Columbia when using the term "State."

22. For consistency with the 3-year tables and figures (e.g., Figure 2), all caseload measures exclude patients whose relationship with a physician entailed an electrocardiogram alone. From 1992-1993, Medicare did not permit separate payment for an EKG delivered in conjunction with an office visit. This biased comparisons of recorded caseload between 1991 and 1992, so EKG-only patients are removed from the data. In fact, their removal affected the 1992-1993 comparison trivially, as one would expect. The total numbers of physicians used in computing the caseload means are slightly lower than those reported in the Methods section and in Table XI-A-1, because of the deletion of the EKG claims.

23. An access indicator of even greater interest is the possible effect of fee realignments on physician location decisions. But data to study it are not available from this study, in part because it would be a longer-run result.

24. An analysis of variance test, using the log of 1993 caseload, suggested significant differences in 1993 caseload among the 10 groups (p-value < .0001). A test comparing the 2 rural groups with the remaining 8 groups was not statistically significant (p-value .1289).

25. Because the sample size for thinly populated counties adjacent to a metropolitan area was less than 25, the mean reported for the 3-year analysis refers to the combined adjacent and non-adjacent groups of thinly populated counties.

26 The similarity in results is not surprising, since about 90 percent of the physicians in the study provided paired data.

27 P-value for the analysis of variance test of differences in means among the four groups < .05 P-value for a test of difference in means between the two price decrease groups and the remaining two groups: < .03.

28. The omitted States are Kansas, Maryland, North Dakota, Ohio, South Dakota, and West Virginia. Also omitted is the District of Columbia.

29. NCH 100 percent data were not separable for the State of Kansas. Alabama, Texas, and Idaho are retained, being unaffected by the technical problem mentioned in Note 3.

30. We compared 11 percentile points and found 7 positive changes. Of the remaining percentile points other than the median (or 50th percentile), changes were -37 percent, -14 percent, and -5 percent.

31. To compute the means in Table XI-8, each physician's assignment ratio was taken as follows: total assigned allowed charges divided by total allowed charges. The individual physician ratios were then averaged. In the 1994 Report to Congress, the average was weighted by the volume of the individual's allowed charges.

32. Prob. < 0.02 for black patients and < 0.10 for "other" race patients.

33. Holtgrewe, H. Logan, "Editorial Comments," Adult Urology 44(5):698-699, November 1994.

34. Lu-Yao, Grace L., Michael J. Barry, Chiang-Hua Change, et al. "Transurethral Resection of the Prostate Among Medicare Beneficiaries in the United States: Time Trends and Outcomes," Adult Urology 44(5):692-698, November 1994.

35. Fisher, E.S., et al. "Risk of Carotid Endarterectomy in the Elderly," American Journal of Public Health 79:1617-1620, 1989.

36. Fendrick, A. Mark, Jose J. Escarce, Clyde McLane, et al. "Hospital Adoption of Laparoscopic Cholecystectomy," Medical Care 32(10): 1058-1063, October 1994.

Appendix XII

Impact of the Medicare Fee Schedule on Patterns of Care: Acute Myocardial Infarction and Stroke Patients

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Appendix XII
Impact of the Medicare Fee Schedule on Patterns of Care: Acute Myocardial Infarction and Stroke Patients

INTRODUCTION

Most analyses examining access have presented utilization rates for groups of beneficiaries with varying sociodemographic characteristics, e.g., white persons and residents of rural areas. It is not possible to case-mix-adjust these rates, because no diagnostic information is available for beneficiaries who did not receive services. To better understand how patterns of treatment may change under the Medicare fee schedule (MFS), service use for two tracer conditions, acute myocardial infarction (AMI) and acute cerebral infarction (stroke), was examined.

These two conditions were selected for several reasons. First, both are acute, life-threatening events that nearly always result in hospitalization. Thus differences in illness severity across areas as a factor in any utilization differences can be ruled out. (For those illnesses in which physicians have greater discretion in whether or not to admit, systematic variation in illness severity may result when physicians in some areas have higher or lower admission thresholds than others.) Second, both conditions involve expensive tests and procedures, for which payments were reduced under MFS, as well as visits and consultations, for which payments generally were increased. Whether, and how, physicians have changed the mix of services they provide to AMI and stroke patients can be examined.

In this appendix, data on in-hospital utilization rates for patients admitted with acute myocardial infarction and acute stroke are presented. Rates are shown not just for patients generally, but also for those subgroups who potentially may be vulnerable to any shifts in the supply of physician services. These vulnerable subgroups include residents of health professional shortage areas and of residents rural areas, dual (Medicare-Medicaid) eligibles and other poor elderly beneficiaries, very old and disabled patients, and black patients.

METHODS

Sample Design

As part of a larger study on access under the MFS, a national sample of 2.7 million Medicare beneficiaries was selected in 1991 and followed through 1992 (Mitchell, 1994). A replacement sample of newly eligible beneficiaries was added in 1992. (See Appendix VII Technical Note A for sampling methodology.) A stratified random sampling design was used to oversample small subgroups of potentially vulnerable Medicare beneficiaries (e.g., residents of shortage areas). The design also was used to ensure adequate numbers of beneficiaries in both areas expected to experience large payment reductions and those areas expected to receive payment increases. All Medicare Part A and Part B claims for these beneficiaries for 1991 and 1992 were extracted.

From this larger sample, all patients with a principal diagnosis of either AMI or cerebral infarction were identified from the Medicare Provider Analysis and Review (MedPAR) claims. In selecting the *International Classification of Diseases, 9th Revision, Clinical Modification* (ICD-9-CM) diagnosis codes, the same codes used by the AMI and Stroke Prevention PORTs in their claims-based studies of AMI and stroke patients were chosen (Mitchell *et al*., 1994). The diagnostic codes were:

AMI: 410 x1, acute myocardial infarction, initial episode of care.
Stroke: 433.x, occlusion and stenosis of precerebral arteries[1]
434 x, occlusion of cerebral arteries.
436, acute, but ill-defined, cerebrovascular disease.

This definition of acute stroke is limited to cerebral infarction, excluding hemorrhagic strokes. The neurologists working on the Stroke Prevention PORT have emphasized the importance of keeping these two groups separate, since patients with hemorrhagic strokes experience worse outcomes and receive a very different mix of services compared with cerebral infarction patients.

The final sample sizes were:

AMI, 1991:	24,579
AMI, 1992:	24,799
Stroke, 1991:	29,041
Stroke, 1992:	29,302

The larger study sample was selected as a panel, with beneficiaries sampled in 1991 followed through the subsequent year. It is thus possible for the same patient to have been present in both years. In fact, this rarely happened; only 2 percent of patients had either AMIs in both years or strokes in both years. In a small number of cases (less than 1 percent), the same beneficiary had both an AMI and a stroke during the same year involving two separate hospitalizations. These patients were included in both the AMI and stroke files.

[1]Patients with this diagnosis and who underwent carotid endarterectomy during the hospital stay were excluded. Neurologists working on the Stroke Prevention PORT believed these patients had not suffered an acute stroke, but were admitted for prophylactic endarterectomy.

Data Sources and File Construction

MedPAR records were used to identify the sample patients. MedPAR records for transfer patients were combined to create a single episode of care. All Part B records associated with the inpatient stay and 90 days post-admission were extracted. Information on patient characteristics was obtained from the denominator files.

Both ICD-9-CM procedure codes from MedPAR claims and Current Procedural Terminology (CPT-4) procedure codes from Part B claims were used to identify physician services. The use of Part B claims alone would have led to underestimates of utilization in teaching hospitals. One reason is residents are not permitted to bill the Medicare Program for the services they provide. Prior studies have found that case-mix-adjusted Part B spending is significantly lower in teaching hospitals than it is in nonteaching hospitals (Miller and Welch, 1993; Mitchell and Ellis, 1992).

Some procedures of interest such as coronary artery bypass graft (CABG) surgery for AMI patients may be performed during a second hospitalization, to give patients time to stabilize prior to surgery. For this reason, utilization rates both for the initial inpatient stay and for a 90-day episode of care were compared. There were no appreciable differences in use, so to maximize power, only rates for the initial hospitalization are presented. (For those analyses based on 90-day episodes, cases admitted after September 30 must be dropped, thereby reducing the sample size by 25 percent.)

Statistical Methods

T-tests were used to determine the statistical significance of differences in rates across groups and over time. Because of the complex nature of the sample design, weighting and standard error adjustments were required. Two types of bivariate statistical comparisons are shown in each table in Appendix XII. First, rates for each vulnerable population are contrasted with the appropriate comparison group; e.g., patients living in shortage areas are compared with those in non-shortage areas and black patients are compared with white patients. These comparisons are made within each of the two study years. Second, changes in rates are tested over time for all patients and for each vulnerable group, e.g., 1991 rates for residents of shortage areas were compared with 1992 rates for residents of shortage areas.

RESULTS

Analysis of Acute Myocardial Infarction Patients

Visits and Consultations

The first two columns in Table XII-1 present data on routine hospital visits per patient in 1991 and 1992, respectively. Overall, the number of hospital visits increased significantly in just 2 years, from 10.2 in 1991 to 11.7 visits per stay in 1992, or approximately 1.5 additional visits per patient. Increases were observed for many of the vulnerable subgroups as well, including disabled patients and those residing in rural areas (including both rural shortage and rural poor

areas). Despite these increases, patients from rural areas receive significantly fewer hospital visits during their AMI hospitalization.

Also, there were no changes in mean length of stay from 1991 to 1992, which implies AMI patients must be receiving more visits per day. In fact, this is the case. Visit intensity increased significantly for all subgroups of patients, except those patients who were less than 85 years of age.

Consultations increased nearly 50 percent, increasing from 1.1 per admission in 1991 to 1.5 per admission in 1992. Comparable increases were observed for all of the patient subgroups shown in Table XII-1. However, AMI patients living in rural areas, including both rural shortage and rural poverty areas, and the very old continue to have significantly fewer consultations compared with other patients.

Diagnostic Tests and Procedures

Patients hospitalized with AMIs may receive a number of diagnostic cardiac tests. Table XII-2 presents data on two such tests: echocardiography (ultrasound of the heart) and cardiac catheterization. Except for patients from rural shortage areas whose use increased, there were no significant changes over this 2-year period in the use of echocardiography, with approximately one-half of all AMI patients receiving this test. There were some marked differences across patient subgroups, however, with patients from rural areas, including both rural shortage and rural poverty areas, and very old patients significantly less likely to receive echocardiography.

There was no change in the use of cardiac catheterization among AMI patients from 1991 to 1992. Because this diagnostic procedure is a prerequisite for bypass surgery and for percutaneous transluminal coronary angioplasty (PTCA), any changes in its use may presage changes in these surgical procedures as well.

Data in Table XII-2 suggest that some gaps in cardiac catheterization between vulnerable subgroups may be closing. Significant differences in black-white and urban poor-nonpoor utilization rates observed in 1991 were insignificant in 1992. Although encouraging, additional years of data will be necessary to confirm a trend. There was a marked difference in catheterization, however, based on Medicaid eligibility. Joint Medicaid-eligible patients were only two-thirds as likely to receive this procedure compared with non-eligible patients. (The lower rates of catheterization among the very old probably can be attributed to their more limited ability to withstand the rigors of surgery that might be done following this diagnostic procedure.)

Table XII-2 also presents data on utilization rates for two revascularization procedures or surgeries intended to treat blocked coronary arteries, CABG surgery and PTCA. There were no changes in the percent of AMI patients undergoing CABG surgery from 1991 to 1992. There were marked differences in bypass rates for some of the vulnerable subgroups. Black Medicare patients hospitalized with AMIs in 1992 were only 56 percent as likely to receive CABG surgery compared with white AMI patients, a finding documented in other studies (Ford, *et al.*, 1989; Boutwell and Mitchell, 1993; Wenneker and Epstein, 1989). Less well-documented are the

significantly lower bypass rates for Medicaid-eligible patients. AMI patients who were joint Medicare-Medicaid eligible were only 45 percent as likely to undergo bypass surgery compared with non-eligible patients. Given low rates of catheterization among Medicaid-eligible patients, these low CABG rates are not surprising.

Although a larger proportion of all AMI patients received PTCA in 1992 than in 1991, this time change was not statistically significant. Consistent with their low cardiac catheterization rates, Medicaid-eligible patients were significantly less likely to receive PTCA, only 60 percent as likely as non-eligible patients.

The data suggest that some utilization gaps may be narrowing. For instance, in 1991, black AMI patients and those living in urban poverty areas were significantly less likely to undergo PTCA. In 1992, the difference in use had narrowed somewhat and was no longer significant. Additional years of data are needed to determine whether this is a trend.

Analysis of Stroke Patients

Visits and Consultations

Data contained in Table XII-3 present the number of routine hospital visits and consultations received by stroke patients during their inpatient stay. Unlike AMI patients, whose hospital visits increased in intensity from 1991 to 1992, there were no changes for stroke patients in intensity of hospital visits over this 2-year period. There were no changes over time in mean length of stay (data not shown). Similar to AMI patients, hospital visit rates were significantly lower among stroke patients living in rural areas, including rural shortage and rural poverty areas. Surprisingly, stroke patients living in urban poverty areas actually received significantly more visits during their hospitalization compared with stroke patients in non-poor areas.

Like AMI patients, stroke patients also received significantly more consultations in 1992 than did those in 1991; consultations increased from 1.24 to 1.65 per patient. Significant increases were observed for all patient subgroups, except for patients from rural shortage areas where the increase was not statistically significant.

Stroke patients from rural areas, including rural shortage and rural poverty areas, and stroke patients 85 years of age or over received significantly fewer consultations during their hospital stay compared with stroke patients in urban areas and those less than 85 years of age, respectively. Surprisingly, stroke patients from urban shortage areas and urban poverty areas had significantly more consultations. One explanation might be that stroke patients from such areas were more likely to be admitted to teaching hospitals where there may be more specialists available for consultation. If so, a similar finding for AMI patients would have been expected, but no such difference was observed.

Diagnostic Tests

Patients hospitalized with an acute cerebral infarction may undergo a number of diagnostic tests to locate the source of the stroke and to assess the degree of carotid stenosis. Table XII-4

presents data on utilization rates for four such tests noninvasive cerebrovascular tests[2], cerebral angiography, computerized tomography (CT) scans of the head, and magnetic resonance imaging (MRI) scans of the brain

The percent of stroke patients receiving noninvasive cerebrovascular tests during their hospital stay increased significantly from 1991 to 1992. Increased testing was observed for many of the vulnerable subgroups as well, but not for shortage are : ..ents, those living in urban poverty areas, or Medicaid-eligible patients. Absolute levels of testing were significantly lower for stroke patients admitted from rural areas, including rural shortage and rural poverty areas, as well as Medicaid-eligibles and the very old.

There was no change in the use of cerebral angiography over this 2 year period. There were some marked differences in use for several vulnerable subgroups, including stroke patients who were black, who were Medicaid-eligible, or who were very old. Black patients and Medicaid-eligible patients were only one-half as likely to undergo this diagnostic procedure compared with stroke patients who were white and non-eligible, respectively. The low rates for the very old probably are related to this group's frailty and perceived high surgical risk. (Cerebral angiography typically is performed on patients considered potential candidates for carotid endarterectomy.)

Similarly, there were no changes in head CT use, with three-quarters of stroke patients receiving CT scans in both 1991 and 1992. However, stroke patients living in rural areas, including rural shortage and rural poverty areas, were significantly less likely to receive this test.

While there was no change in brain MRI scanning among stroke patients generally, use of this diagnostic test increased significantly for several vulnerable subgroups, including residents of shortage areas, residents of poverty areas, and black persons. Stroke patients living in rural shortage areas, who were Medicaid-eligible or who were 85 years of age or over, were all significantly less likely to undergo this test compared with their respective comparison groups.

CONCLUSION

AMI patients treated in 1992 received significantly more visits and consultations during their inpatient stay compared with those treated in 1991. While increased payments for evaluation and management services under the MFS is one possible explanation, a longer study period is needed for a more definitive answer. Furthermore, while stroke patients treated in 1992 also received significantly more consultations, there was no difference in their hospital visits per stay from 1991 through 1992. There were no changes in the utilization of diagnostic tests and surgical procedures from 1991 to 1992, except for non-invasive cerebrovascular tests, which increased among stroke patients.

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[2]Non-invasive tests include Doppler ultrasound and Duplex scans of the extracranial arteries, and transcranial Doppler studies of the intracranial arteries.

More important than possible MFS impacts are the large differences in use between many vulnerable and non-vulnerable patients. Some of these differences have been documented in other studies, e.g., the lower rates of utilization of cardiac procedures among black persons. However, even larger gaps in use were found between those AMI patients who were jointly eligible for Medicaid and those who were not. Medicaid-eligible AMI patients were significantly less likely to undergo cardiac catheterization, PTCA, or CABG surgery compared with non-eligible patients. Multivariate regression analyses (data not shown) confirmed these differences, even after controlling for other factors such as patient age, gender, race, and comorbidities. More research is needed to determine the reason behind this differential use of services.

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TABLE XII-1

HOSPITAL VISITS, LENGTH OF STAY, AND CONSULTATIONS FOR MEDICARE BENEFICIARIES HOSPITALIZED FOR AMI

	HOSPITAL VISITS (PER PATIENT)		MEAN LENGTH OF STAY		HOSPITAL VISITS PER DAY		CONSULTATIONS PER PATIENT	
Vulnerable Population	1991	1992	1991	1992	1991	1992	1991	1992
Shortage Areas								
All Shortage Combined	9.72	11.17 [b]	10.86	10.66	0.95	1.09 [b]	1.00	1.40 [b]
Urban	10.76	12.17	11.60	11.33	0.97	1.11 [b]	1.24	1.75 [b]
Rural	8.33 [a]	9.85 [ab]	9.87	9.78	0.91	1.06 [ab]	0.67 [a]	0.93 [ab]
Non-Shortage	10.21	11.73 [b]	11.01	10.54	0.97	1.15 [b]	1.08	1.54 [b]
Poor Areas								
All Poor Combined	11.29	12.11	12.40 [a]	11.59 [a]	0.96	1.09 [ab]	1.13	1.65 [b]
Urban	11.92 [a]	12.43	13.01 [a]	12.08 [a]	0.96	1.08 [b]	1.26	1.85 [b]
Rural	9.36	11.18 [b]	10.50	10.11	0.94	1.10 [b]	0.73 [a]	1.06 [ab]
Non Poor	10.10	11.67 [b]	10.90	10.47	0.97	1.15 [b]	1.08	1.53 [b]
Race								
Black	10.34	11.78	11.08	10.91	0.95	1.12 [b]	1.11	1.69 [b]
White	10.21	11.66	10.99	10.52	0.97	1.15 [b]	1.08	1.53 [b]
Medicaid Eligible								
Yes	10.09	11.21	11.37	10.30	0.96	1.14 [b]	0.97	1.41 [b]
No	10.19	11.77 [b]	10.95	10.58	0.96	1.15 [b]	1.10	1.55 [b]
Disabled								
Yes	9.75	11.66 [b]	11.01	10.51	0.93	1.14 [b]	1.05	1.54 [b]
No	10.26	11.71	11.00	10.55	0.97	1.15 [b]	1.09	1.53 [b]
Age								
85+ Years	9.66	10.54	10.12	9.54	1.01	1.15 [b]	0.80 [a]	1.13 [ab]
Less than 85	10.25	11.86 [b]	11.12	10.68	0.96	1.15	1.12	1.59 [b]
Area of Residence								
Rural	8.50 [a]	10.35 [ab]	10.02	9.88	0.90 [a]	1.10 [b]	0.72 [a]	1.04 [ab]
Urban	10.90	12.30	11.42	10.84	0.99	1.17 [b]	1.23	1.75 [b]
ALL PATIENTS	10.18	11.70 [b]	11.00	10.55	0.96	1.15 [b]	1.08	1.53 [b]

[a] Significantly different from the comparison group at the 0.05 level

[b] Significantly different from 1991 to 1992 at the 0.05 level

SOURCE: CHER analysis of Medicare Part A and Part B claims for a sample of beneficiaries

TABLE XII-2

PERCENT OF AMI PATIENTS RECEIVING SELECTED TESTS AND PROCEDURES DURING THE INITIAL HOSPITAL STAY

	ECHOCARDIOGRAPHY		CARDIAC CATHETERIZATION		CABG SURGERY		PTCA	
Vulnerable Population	1991	1992	1991	1992	1991	1992	1991	1992
Shortage Areas								
All Shortage Combined	46.6%	49.6%	35.0%	39.2%	9.2%	9.8%	10.2%	12.2%
Urban	55.6	56.6	34.5	39.7	9.0	9.4	9.2	12.4
Rural	34.4 a	40.5 ab	35.5	38.5	9.4	10.4	11.5	11.9
Non-Shortage	49.8	52.2	39.4	41.5	10.4	12.0	13.0	14.5
Poor Areas								
All Poor Combined	53.1	54.1	32.4 a	36.2	8.2	9.0	8.8 a	11.3
Urban	57.6 a	58.5	31.0 a	35.5	7.8	8.6	7.9 a	11.0
Rural	39.6 a	41.3 a	36.8	38.2	9.3	10.0	11.5	12.1
Non Poor	49.4	51.9	39.7	41.7	10.5	12.1	13.2	14.6
Race								
Black	55.3	55.1	32.9 a	36.7	6.3 a	6.9 a	8.8 a	10.9
White	49.2	51.9	39.6	41.5	10.6	12.3	13.1	14.4
Medicaid Eligible								
Yes	46.1	48.0	26.0 a	28.4 a	5.8 a	5.8 a	7.6 a	9.2 a
No	50.1	52.6	41.1	43.3	10.9	12.8	13.6	15.2
Disabled								
Yes	47.3	49.8	42.9	46.2 a	10.4	12.5	12.5	15.2
No	50.0	52.4	36.5	40.1	10.3	11.8	13.0	14.2
Age								
85+ Years	43.2 a	45.4 a	6.2 a	7.1 a	1.1 a	0.5 a	2.3 a	3.4 a
Less than 85	50.4	53.0	43.4	46.1	11.5	13.5	14.2	15.9
Area of Residence								
Rural	41.0 a	43.2 a	36.0	39.3	9.6	11.3	12.3	13.5
Urban	53.3	56.0	40.6	42.3	10.6	12.2	13.1	14.8
ALL PATIENTS	49.6	52.0	39.2	41.4	10.3	11.9	12.9	14.4

a Significantly different from the comparison group at the 0.05 level

b Significantly different from 1991 to 1992 at the 0.05 level

SOURCE: CHER analysis of Medicare Part A and Part B claims for a sample of beneficiaries

TABLE XII-3

HOSPITAL VISITS AND CONSULTATIONS FOR MEDICARE BENEFICIARIES HOSPITALIZED FOR STROKE (contacts per patient)

	HOSPITAL VISITS		CONSULTATIONS	
Vulnerable Population	1991	1992	1991	1992
Shortage Areas				
All Shortage Combined	11.44	10.92	1.26	1.72 [b]
Urban	12.74	12.13	1.57 [a]	2.15 [ab]
Rural	8.99 [a]	8.66 [a]	0.73 [a]	0.94 [a]
Non-Shortage	11.73	11.22	1.24	1.85 [b]
Poor Areas				
All Poor Combined	13.18 [a]	12.58 [a]	1.44	1.86 [b]
Urban	14.02 [a]	13.43 [a]	1.67 [a]	2.16 [ab]
Rural	10.23 [a]	9.75 [a]	0.65 [a]	0.90 [ab]
Non Poor	11.57	11.08	1.22	1.63 [b]
Race				
Black	12.89 [a]	12.32	1.33	1.76 [b]
White	11.50	11.08	1.21	1.65 [b]
Medicaid Eligible				
Yes	12.52	11.51	1.12	1.49 [b]
No	11.53	11.14	1.26	1.69 [b]
Disabled				
Yes	11.52	11.58	1.29	1.83 [b]
No	11.74	11.15	1.23	1.63 [b]
Age				
85+ Years	11.88	11.06	0.98 [a]	1.31 [ab]
Less than 85	11.67	11.24	1.30	1.73 [b]
Area of Residence				
Rural	9.96 [a]	9.33 [a]	0.76 [a]	1.00 [ab]
Urban	12.40	11.96	1.43	1.92 [b]
ALL PATIENTS	11.71	11.21	1.24	1.65 [b]

[a] Significantly different from the comparison group at the 0.05 level
[b] Significantly different from 1991 to 1992 at the 0.05 level

SOURCE: CHER analysis of Medicare Part A and Part B claims for a sample of beneficiaries

TABLE XII-4

PERCENT OF STROKE PATIENTS RECEIVING SELECTED DIAGNOSTIC TESTS AND PROCEDURES DURING THE INITIAL HOSPITAL STAY

	NONINVASIVE CEREBROVASCULAR TESTS		CEREBRAL ANGIOGRAPHY		HEAD CT SCANS		BRAIN MRI SCANS	
Vulnerable Population	1991	1992	1991	1992	1991	1992	1991	1992
Shortage Areas								
All Shortage Combined	35.0%	39.5%	5.3%	6.4%	74.7%	74.2%	10.7%	14.2% [b]
Urban	39.4	43.3	5.8	6.4	78.8	78.4	12.2	16.5
Rural	28.8 [a]	32.4 [a]	4.8	6.3	66.8 [a]	66.5 [a]	7.9 [a]	9.9 [a]
Non-Shortage	36.5	42.9 [b]	5.7	6.4	75.4	74.8	11.7	14.8
Poor Areas								
All Poor Combined	35.1	40.0 [b]	5.8	5.1	76.5	75.9	11.9	16.0 [b]
Urban	37.3	42.2	5.4	4.7	76.9	78.3	12.9	17.4
Rural	27.5 [a]	32.8 [ab]	6.5	6.2	68.3 [a]	68.2 [a]	6.4 [a]	11.2 [b]
Non Poor	36.8	43.0 [b]	5.7	6.5	75.2	74.6	11.6	14.6
Race								
Black	34.8	39.8 [b]	4.1 [a]	3.5 [a]	77.5	75.3	11.4	16.6 [b]
White	36.7	43.3 [b]	7.0	6.7	75.1	74.8	11.4	14.4
Medicaid Eligible								
Yes	28.9 [a]	33.3 [a]	3.3 [a]	3.4 [a]	74.7	73.9	9.0	11.3 [a]
No	36.2	44.9 [b]	7.4	7.0	75.5	74.9	12.2	15.5
Disabled								
Yes	37.2	44.1 [b]	6.3	6.4	74.0	73.5	12.5	16.4
No	36.3	42.5 [b]	6.4	6.1	75.5	74.9	11.5	14.5
Age								
65+ Years	24.2 [a]	31.0 [ab]	1.2 [a]	1.3 [a]	74.9	73.6	5.7 [a]	7.3 [a]
Less than 65	39.2	45.5 [b]	7.9	7.5	75.4	75.0	12.9	16.5
Area of Residence								
Rural	28.7 [a]	34.9 [ab]	6.1	5.7	72.6	70.6 [a]	8.8 [a]	10.8 [a]
Urban	39.5	46.0	6.9	6.6	76.4	76.4	12.7	16.4
ALL PATIENTS	36.4	42.7 [b]	6.6	6.4	75.3	74.7	11.6	14.7

[a] Significantly different from the comparison group at the 0.05 level

[b] Significantly different from 1991 to 1992 at the 0.05 level

SOURCE: CHER analysis of Medicare Part A and Part B claims for a sample of beneficiaries

Appendix XIII

Other Relevant Activities and Future Work

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Appendix XIII

Other Relevant Activities and Future Work

The statute requires the Secretary of the Department of Health and Human Services to include as part of this annual Medicare physician payment report recommendations addressing

(I) Any identified patterns of inappropriate utilization,
(II) Utilization review, and
(III) Physician education or patient education.

Appendix XIII presents the activities under way in the Department regarding each of these issues.

I. Addressing any identified patterns of inappropriate utilization

The Agency for Health Care Policy and Research (AHCPR) in the Department of Health and Human Services was established by the Omnibus Budget Reconciliation Act (OBRA) of 1989 to enhance the quality, appropriateness, and effectiveness of health care services. To carry out this legislative mandate, AHCPR is the primary sponsor of the Medical Treatment Effectiveness Program (MEDTEP), a program that has four components: (1) research projects relating to understanding patient outcomes; (2) development of clinical practice guidelines; (3) development of data bases to support effectiveness research; and (4) dissemination of research findings and practice guidelines.

MEDTEP's most ambitious research projects are the "Patient Outcomes Research Teams" (PORTs) and, more recently, Port II. PORTs are complex 5-year studies involving syntheses of the literature, analyses of primary and secondary data, and the development of clinical recommendations. Other important features are the dissemination of findings and the evaluation of the dissemination on changes in clinical practice. PORTs address the following clinical conditions: low back pain, total knee replacement, acute myocardial infarction, cataract, prostate disease, ischemic heart disease, biliary tract disease, hip fracture and replacement, childbirth, diabetes, pneumonia, stroke, low birth weight, and schizophrenia. Several of the original 14 PORT projects are near completion.

In 1993, AHCPR developed PORT II, a new generation of MEDTEP research. PORT IIs continue the PORT tradition of developing important new evidence for clinical practice. They address outstanding issues of effectiveness and cost effectiveness. PORT IIs telescope descriptive work and focus on hypothesis testing. AHCPR issued the PORT II request for applications in 1993 and has awarded six projects to date. Subject areas include medical testing prior to cataract surgery, dialysis cares, infant oral rehydration therapy, cardiac arrhythmia, local breast cancer, and prostatic diseases. Additional PORT IIs are anticipated.

AHCPR has supported nearly 200 other MEDTEP research projects that focused on improving the effectiveness of medical practice by increasing the amount of evidence for clinical decisionmaking. For example, among these projects is a research portfolio focusing on the outcomes of pharmaceutical therapy. This pharmaceutical research consists of 16 projects and includes work in the area of computer-based drug utilization review.

Another major activity of the MEDTEP is the development of clinical practice guidelines. The guidelines are prepared by panels of private sector experts and consumers or are prepared under contract with nonprofit entities. The focus of the guidelines is on clinical conditions and procedures. The clinical conditions or procedures were selected because they affect many people, are expensive, involve wide variations in current medical practice or patient outcomes, or important for the Medicare program and other public programs. Clinical guidelines have been released for urinary incontinence (March 1992); acute postoperative pain (March 1992); prevention and early intervention of pressure ulcers (May 1992); management of cataract (February 1993); depression (April 1993); sickle cell disease (April 1993); evaluation and management of early human immunodeficiency virus (January 1994); benign prostatic hyperplasia (February 1994); management of cancer pain (March 1994); unstable angina (May 1994); heart failure (June 1994); otitis media (July 1994); quality determinants of mammography (October 1994); acute low back pain (December 1994); and treatment of pressure ulcers (December 1994). Practice guidelines for additional topics are in various stages of development and of peer review.

Health care providers, educators, and consumers may use these guidelines to help reduce uncertainty in the prevention, diagnosis, treatment, and management of health conditions. Findings from the PORTs and other similar research, as well as comprehensive literature reviews and research syntheses, are used in develop and updating these guidelines.

In addition to developing clinical guidelines, AHCPR also is fostering the translation of guidelines into tools for quality improvement through the creation of guideline based medical review criteria and performance measures. Once developed, these tools can be used to examine patterns of care and to provide information that can be used to establish standards of quality. AHCPR has contracted with the American Medical Review Research Center (AMRRC) to develop quality and utilization review criteria for AHCPR-supported guidelines for urinary incontinence, acute postoperative pain, and benign prostate hyperplasia (BPH). The project utilizes five Medicare Peer Review Organizations (PROs) to develop criteria based on the three guidelines, to develop and test training materials in using the criteria for case review, to pilot test the criteria to assess intra and interrater reliability, and to compare guideline-based review with the review systems currently used by PROs. The PROs also are playing an integral role in developing, implementing and evaluating alternative educational outreach strategies based on the BPH guidelines.

Another project, under a delivery order contract initiated with the RAND Corporation involves translating AHCPR-supported guidelines into medical review criteria for use in a variety of care settings including hospitals, health maintenance organizations (HMO), ambulatory clinics, and physicians' offices. This project, like the AMRRC project, will assess the usefulness of alternative educational interventions for disseminating the guidelines and review criteria and changing

provider behavior. The project is structured to focus on a variety of AHCPR-supported clinical practice guidelines as they become available. Two delivery orders are currently underway. The first focuses on the guidelines for cataract management in adults, the second focuses on the guidelines for prevention of pressure ulcers. The criteria for this project will be developed with input from the Department of Veteran Affairs (DVA) and will be tested in a number of DVA facilities. Upon completion of both delivery orders, AHCPR and the DVA will test alternative methods for disseminating the guidelines and for using criteria as tools for assessing the effect of guidelines on practice patterns in a followup project.

HCFA maintains primary responsibility for monitoring various changes that occur in the operation during the new Medicare physician payment system. HCFA will utilize MEDTEP findings to help identify patterns of inappropriate use and will address them through the PROs.

II. Addressing utilization review

The PROs, under contract to HCFA, are required by law to assess the quality of care received by Medicare beneficiaries. Historically, the review of individual cases has been the primary tool to achieve this goal. To advance the efficiency and effectiveness of PRO monitoring efforts, the Medicare Quality Indicators System (MQIS) was developed. MQIS will be used to profile patterns of medical care and will allow HCFA, medical providers, and consumers to determine when practice patterns differ from established practice guidelines or medical consensus. Initially, this system will be developed to examine care for hospitalized patients. Eventually, it will be merged with other billing records to describe a much broader range of medical services. MQIS also will examine outcomes of care and allow a systematic analysis of the validity of billing codes.

Initially, MQIS will have the capability of profiling medical care for only the most common conditions. Over the ensuing years, the system will be expanded to cover the full range of hospital admissions. MQIS requires a consistent, reproducible methodology for examining practice guidelines, identifying areas of consensus in medical care, and converting these findings into suitable profiles for medical practice. Rapid changes in medical knowledge and improvements in medical practice will require a methodology for continuously improving these profiles. Most importantly, development and maintenance of MQIS will require continuous interaction among HCFA, the Public Health Service, PROs, and the medical community to assure that these profiles do indeed reflect the state of the art of medical practice and are useful in supporting and monitoring efforts to improve medical care.

III. Addressing physician education or patient education

Since its inception in 1984, PRO review has been centered on the case-by-case review of individual medical records, selected primarily on a sample basis, using essentially intuitive local clinical criteria. There are serious shortcomings to this approach. The approach is costly, compartmentalized, and confrontational. Most importantly, it holds little hope for fostering meaningful change in provider and practitioner behavior. These shortcomings were discussed in the 1990 Institute of Medicine (IOM) report, "Medicare: A New Strategy for Quality Assurance."

HCFA has developed new strategy consistent with the IOM recommendations to continuously improve quality of care, and to strengthen the ability of health care organizations and practitioners in assessing and improving their own performance. This strategy, the Health Care Quality Improvement Program (HCQIP), is diverting the PRO program from its emphasis on individual (and often isolated) clinical errors to helping providers improve the mainstream of medical care.

The HCQIP has its conceptual foundations in the health care variations research of the last decade--research which was examined variability in care and outcomes among providers and geographical areas--and in the continuous quality improvement models now being adapted to health care from the experience of other industries. Under the HCQIP, PROs are beginning to utilize statistical methods to examine variations in both the processes and outcomes of care. PROs then will share these data with hospital staffs and physicians and will work with them to interpret and apply the findings.

In addition to physician education, HCFA is continuing to use its contracting arrangement with PROs as a tool to increase emphasis on beneficiary outreach. HCFA's goal in beneficiary outreach is to develop a consistent and comprehensive approach to beneficiary outreach and to seize every opportunity to inform consumers about disease prevention and quality health care practices and concerns. PROs are pursuing opportunities to meet with consumer groups to disseminate information and to solicit ideas for more effective beneficiary communications. Furthermore, PRO boards continue to include a Medicare beneficiary representative to lend the beneficiary's perspective to PRO outreach activities. PROs have established a beneficiary communications workgroup charged with identifying current outreach modalities, sharing best practices, and developing new ideas to provide further information on health services and quality care.

HCFA has initiated a new program called the Consumer Information Strategy (CIS) to help Medicare and Medicaid beneficiaries make more informed choices regarding their health care. Using extensive amounts of data collected by the Medicare and Medicaid programs as well as information from other sources, HCFA is providing information on patterns of care and utilization of services to beneficiaries and their health care providers. The first two campaigns focused on promoting the use of flu shots and screening mammography. Later campaigns will help beneficiaries choose among treatment options for localized prostate cancer and early stage breast cancer.

Future Work

This year's Report to Congress has included socioeconomic data from the Bureau of the Census linked with Medicare data at the zip-code level of aggregation. This method has a number of limitations including annual changes to zip code destinations and a relatively high degree of heterogeneity within zip codes. For future reports, HCFA is working on a project that will enable aggregated analyses at the census tract level. Not only is this a more stable designation than is zip code, it provides a finer level of disaggregation of information. Although currently the census tract for a beneficiary's place of residence is not available on the Medicare enrollment data base, it

can be generated in algorithms that use the address, including the 9-digit zip code of the beneficiary. HCFA is working with the Social Security Administration to add the 9-digit zip code to the HCFA enrollment data base and, subsequently, calculating census tract designations for all beneficiaries

HCFA also has a project underway to compare the income information on the 1990 Census with the information collected by the Medicare Current Beneficiary Survey. The focus of this project is to compare the self-reported income of Medicare beneficiaries responding to the Current Beneficiary Survey who reside in specific zip codes with the median income from census data on corresponding age and race groups for that zip code. This information will help HCFA determine how representative the median income from the census data are of the incomes of Medicare beneficiaries residing in that zip code.

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DEPARTMENT OF HEALTH & HUMAN SERVICES

Health Care Financing Administration

Director
Executive Secretariat
Washington, D.C. 20201

SEP 13 1995

NOTE TO: Carolyn Robinson, OS/ES

SUBJECT: Report to Congress: Monitoring the Impact of Medicare Physician Payment Reform on Utilization and Access - (RC 95-115)

This report received simultaneous HCFA and Departmental review. The Department cleared the report with no comments. Revisions to the report as a result of the HCFA comments are provided in the attached mark-up. Due to the size of the report, there were a fair number of technical clarifications, all of which ORD addressed. None of the clarified statements had any policy implementations. Therefore, we do not believe this report needs any additional review within the Department.

We are requesting expedited OMB review because HCFA has a printing contract deadline of September 15. We appreciate your expeditious handling. If you have any questions, please contact me or Tom Reilly at (410) 786-2196.

Joyce G. Somsak
Executive Secretary

Attachments

The Administrator
Washington, D.C. 20201

SEP 13 1995

DATE:

TO: The Secretary
THRU: DS _____
COS _____
ES _____

FROM: Administrator
Health Care Financing Administration

SUBJECT: Report to Congress: "Monitoring the Impact of Medicare Physician Payment Reform on Utilization and Access" - RC 95-115

Action Requested By: As Soon As Possible

BACKGROUND

This is the fifth annual report submitted to Congress in response to the Omnibus Budget Reconciliation Act of 1989 (Public Law 101-239) which amended the Social Security Act by adding Section 1848, "Payments for Physicians' Services."

The major intent of this legislation was to provide more rational and equitable payment for physicians' services provided under Medicare. The Medicare fee schedule (MFS) led to a shift of Medicare payments from procedural services to evaluation and management services and from urban areas to rural areas.

Section 1848(g)(7) requires the Secretary of the Department of Health and Human Services to monitor and report annually to Congress on changes in utilization and access, by population groups, geographic areas, types of services, and on possible sources of inappropriate use.

The 1995 report

For the 1995 report, the Health Care Financing Administration (HCFA) updated (or expanded) each of the 1994 analyses. In addition, new analyses are reported that explore the effect of socioeconomic status (SES) on utilization patterns. To analyze the effect of SES, area-wide income data on the ZIP code level obtained from the 1990 U.S. Census were linked to person-level Medicare data. The linked data were used to study utilization patterns and access to care across income groupings.

This report is divided into two major parts. Part I summarizes the new analyses of the effect of income on access to care. Part II summarizes the updated studies. Thirteen appendices,

which provide full details of the studies, are included as attachments.

Six major policy issues addressed

This report addresses six policy issues:

- To what extent does health status -- as measured by mortality rates -- vary by race and income?
- To what extent does utilization of Medicare services vary by race and income?
- To what extent does standardization of income between black and white Medicare population groups reduce racial differences in mortality and utilization?
- Did the MFS invoke the kinds of payment changes anticipated?
- Did payment reform present new barriers for vulnerable populations groups?
- What have been the impacts of the MFS on physicians' practices?

HIGHLIGHTS

Part I

1. There are very substantial differences in the income distributions of Medicare beneficiaries across races. Twenty-seven (27) percent of all white beneficiaries fell into the highest income quartile but only 6 percent of all black beneficiaries fell into the highest income quartile. In contrast, 19 percent of all white beneficiaries fell into the lowest income quartile while 73 percent of all black beneficiaries fell into the lowest income quartile.

2. The higher mortality rates for black beneficiaries compared to white beneficiaries indicate that health status is lower among black beneficiaries.

3. For black beneficiaries the ambulatory physician visit rate was lower than for white beneficiaries; in contrast for black beneficiaries the total hospitalization rate was higher than for white beneficiaries. These utilization patterns suggest that black beneficiaries may experience more barriers to comprehensive and continuous care than white beneficiaries.

4. For many common procedures, such as coronary artery bypass graft (CABG), percutaneous transluminal coronary angioplasty (PTCA), and knee and hip replacements, utilization rates are higher for white beneficiaries than for black beneficiaries, suggesting that black beneficiaries are at risk of experiencing barriers to several referral-sensitive procedures.

5. The most important new knowledge gained from these analyses is that lower SES, in and of itself, is also a risk factor for all Medicare population groups, including white beneficiaries. The new analyses showed that:

   -- The rate of ambulatory physician visits declined 18 percent for white beneficiaries and 12 percent for black beneficiaries as income declined.

   -- Among black beneficiaries in the lowest income group, rates of referral-sensitive procedures such as PTCA were 24 percent lower than the rates for black beneficiaries in the highest income quartile. The corresponding difference for CABG was 16 percent.

   -- Among white beneficiaries in the lowest income quartile, the rate of hospitalization for hypertension was more than twice as high as the rate for beneficiaries in the highest income quartile.

   -- The rate of bilateral orchiectomy (removal of testes for cancer) was 43 percent greater for the least affluent white males than for the most affluent white males.

6. Standardization of income across races showed that if the income distributions for black beneficiaries and white beneficiaries were equal, the racial differences in utilization rates for many services would decrease, although generally by only a modest amount. But, for some services, such as ambulatory physician visits, magnetic resonance imaging (MRI), and mammography, the standardization of income diminished appreciably the disparities by race -- indicating that low income among black beneficiaries plays a substantial role with regard to access to care for certain services.

Part II.

The important results from the studies performed for the 1994 report held true in the updated analyses. Three major conclusions in 1994 can again be reported in 1995:

1. The MFS has produced the kinds of shifts in payments that were anticipated.

2. For the vulnerable populations studied, no new barriers to care were found. However, there are continuing indications that many population groups face barriers to care.

3. Additional understanding is needed of barriers to care for vulnerable populations to further improve their access to care.

Future work

HCFA intends to expand its monitoring and analyses of access to care along three lines:

1. The SES studies will be refined by using multi-variate techniques that include additional SES variables from the U.S. Census, such as educational attainment.

2. The SES analyses will be refined by using the census tract as the unit of aggregation instead of the ZIP code. The feasibility of this effort depends upon the ability in HCFA to map current beneficiary residence information into census tract designations.

3. The current monitoring system will be improved to monitor additional indicators. For example, HCFA intends to monitor the use of all preventive services and hospitalizations for referral-sensitive conditions.

RECOMMENDATION

I recommend that you approve this report and transmit it to the President of the Senate and Speaker of the House of Representatives.

DECISION

Approve_____ Disapprove_____ Date_____

Bruce C. Vladeck

3 Attachments:
Tab A - Letter to President of the Senate
Tab B - Letter to Speaker of the House
Tab C - Report to Congress

THE SECRETARY OF HEALTH AND HUMAN SERVICES
WASHINGTON D.C. 20201

The Honorable Albert Gore, Jr.
President of the Senate
Washington, D.C. 20510

Dear Mr. President:

I am respectfully submitting our fifth annual report to Congress, entitled "Monitoring the Impact of Medicare Physician Payment Reform on Utilization and Access." The report summarizes twelve separate analyses and includes thirteen technical appendices.

BACKGROUND

This is the fifth annual report submitted to Congress in response to the Omnibus Budget Reconciliation Act of 1989 (Public Law 101-239) which amended the Social Security Act by adding Section 1848, "Payments for Physicians' Services."

The major intent of this legislation was to provide more rational and equitable payment for physicians' services provided under Medicare. The Medicare fee schedule (MFS) led to a shift of Medicare payments from procedural services to evaluation and management services and from urban areas to rural areas.

Section 1848(g)(7) requires the Secretary of the Department of Health and Human Services to monitor and report annually to Congress on changes in utilization and access, by population groups, geographic areas, types of services, and on possible sources of inappropriate use.

The 1995 report

For the 1995 report, the Health Care Financing Administration (HCFA) updated (or expanded) each of the 1994 analyses. In addition, new analyses are reported that explore the effect of socioeconomic status (SES) on utilization patterns. To analyze the effect of SES, area-wide income data on the ZIP code level obtained from the 1990 U.S. Census were linked to person-level Medicare data. The linked data were used to study utilization patterns and access to care across income groupings.

This report is divided into two major parts. Part I summarizes the new analyses of the effect of income on access to care. Part II summarizes the updated studies. Thirteen appendices, which provide full details of the studies, are included as attachments.

Six major policy issues addressed

This report addresses six policy issues:

- To what extent does health status -- as measured by mortality rates -- vary by race and income?
- To what extent does utilization of Medicare services vary by race and income?
- To what extent does standardization of income between black and white Medicare population groups reduce racial differences in mortality and utilization?
- Did the MFS invoke the kinds of payment changes anticipated?
- Did payment reform present new barriers for vulnerable populations groups?
- What have been the impacts of the MFS on physicians' practices?

HIGHLIGHTS

Part I

1. There are very substantial differences in the income distributions of Medicare beneficiaries across races. Twenty-seven (27) percent of all white beneficiaries fell into the highest income quartile but only 6 percent of all black beneficiaries fell into the highest income quartile. In contrast, 19 percent of all white beneficiaries fell into the lowest income quartile while 73 percent of all black beneficiaries fell into the lowest income quartile.

2. The higher mortality rates for black beneficiaries compared to white beneficiaries indicate that health status is lower among black beneficiaries.

3. For black beneficiaries the ambulatory physician visit rate was lower than for white beneficiaries; in contrast for black beneficiaries the total hospitalization rate was higher than for white beneficiaries. These utilization patterns suggest that black beneficiaries may experience more barriers to comprehensive and continuous care than white beneficiaries.

4. For many common procedures, such as coronary artery bypass graft (CABG), percutaneous transluminal coronary angioplasty (PTCA), and knee and hip replacements, utilization rates are higher for white beneficiaries than for black beneficiaries, suggesting that black beneficiaries are at risk of experiencing barriers to several referral-sensitive procedures.

5. The most important new knowledge gained from these analyses is that lower SES, in and of itself, is also a risk factor for all Medicare population groups, including white beneficiaries. The new analyses showed that:

   -- The rate of ambulatory physician visits declined 18 percent for white beneficiaries and 12 percent for black beneficiaries as income declined.

   -- Among black beneficiaries in the lowest income group, rates of referral-sensitive procedures such as PTCA were 24 percent lower than the rates for black beneficiaries in the highest income quartile. The corresponding difference for CABG was 16 percent.

   -- Among white beneficiaries in the lowest income quartile, the rate of hospitalization for hypertension was more than twice as high as the rate for beneficiaries in the highest income quartile.

   -- The rate of bilateral orchiectomy (removal of testes for cancer) was 43 percent greater for the least affluent white males than for the most affluent white males.

6. Standardization of income across races showed that if the income distributions for black beneficiaries and white beneficiaries were equal, the racial differences in utilization rates for many services would decrease, although generally by only a modest amount. But, for some services, such as ambulatory physician visits, magnetic resonance imaging (MRI), and mammography, the standardization of income diminished appreciably the disparities by race -- indicating that low income among black beneficiaries plays a substantial role with regard to access to care for certain services.

Part II.

The important results from the studies performed for the 1994 report held true in the updated analyses. Three major conclusions in 1994 can again be reported in 1995:

1. The MFS has produced the kinds of shifts in payments that were anticipated.

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3. Additional understanding is needed of barriers to care for vulnerable populations to further improve their access to care.

Future work

HCFA intends to expand its monitoring and analyses of access to care along three lines:

1. The SES studies will be refined by using multi-variate techniques that include additional SES variables from the U.S. Census, such as educational attainment.

2. The SES analyses will be refined by using the census tract as the unit of aggregation instead of the ZIP code. The feasibility of this effort depends upon the ability in HCFA to map current beneficiary residence information into census tract designations.

3. The current monitoring system will be improved to monitor additional indicators. For example, HCFA intends to monitor the use of all preventive services and hospitalizations for referral-sensitive conditions.

I am also sending a copy of this report to the Speaker of the House of Representatives.

Sincerely,

Donna E. Shalala

Enclosure

THE SECRETARY OF HEALTH AND HUMAN SERVICES
WASHINGTON, D.C. 20201

The Honorable Newt Gingrich
Speaker of the House
of Representatives
Washington, D.C. 20515

Dear Mr. Speaker:

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BACKGROUND

This is the fifth annual report submitted to Congress in response to the Omnibus Budget Reconciliation Act of 1989 (Public Law 101-239) which amended the Social Security Act by adding Section 1848, "Payments for Physicians' Services."

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HIGHLIGHTS

Part I

1. There are very substantial differences in the income distributions of Medicare beneficiaries across races. Twenty-seven (27) percent of all white beneficiaries fell into the highest income quartile but only 6 percent of all black beneficiaries fell into the highest income quartile. In contrast, 19 percent of all white beneficiaries fell into the lowest income quartile while 73 percent of all black beneficiaries fell into the lowest income quartile.

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4. For many common procedures, such as coronary artery bypass graft (CABG), percutaneous transluminal coronary angioplasty (PTCA), and knee and hip replacements, utilization rates are higher for white beneficiaries than for black beneficiaries, suggesting that black beneficiaries are at risk of experiencing barriers to several referral-sensitive procedures.

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3. The current monitoring system will be improved to monitor additional indicators. For example, HCFA intends to monitor the use of all preventive services and hospitalizations for referral-sensitive conditions.

I am also sending a copy of this report to the President of the Senate.

Sincerely,

Donna E. Shalala

Enclosure

OP/STAFF DIV: HCFA/ORD

DATE: SEP 13 1995

SUMMARY STATEMENT

SUBJECT:

The Omnibus Budget Reconciliation Act of 1989 requires the Secretary of the Department of Health and Human Services to submit an annual report to Congress on utilization of and access to care under Medicare physician payment reform. Attached is the Fourth Annual Report to Congress, entitled "Monitoring the Impact of Medicare Physician Payment Reform on Utilization and Access."

PURPOSE:

Transmittal to Congress

SUMMARY:

For the 1995 report, the Health Care Financing Administration (HCFA) updated or (expanded) each of the 1994 analyses. In addition, new analyses are reported that explore the effect of socioeconomic status (SES) on utilization patterns. To analyze the effect of SES, area-wide income data on the ZIP code level obtained from the 1990 U.S. Census were linked to person-level Medicare data. The linked data were used to study utilization patterns and access to care across income groupings. Highlights of the 1995 report follow..

1. There are very substantial differences in the income distributions of Medicare beneficiaries across races. Twenty -seven (27) percent of all white beneficiaries fell into the highest income quartile but only 6 percent of all black beneficiaries fell into the highest income quartile. In contrast, 19 percent of all white beneficiaries fell into the lowest income quartile while 73 percent of all black beneficiaries fell into the lowest income quartile.

2. The higher mortality rates and higher overall hospitalization rates for black beneficiaries compared to white beneficiaries indicate that health status is lower among black beneficiaries.

3. The ambulatory physician visit rate is lower for black beneficiaries, which suggests that black beneficiaries may experience more barriers to comprehensive and continuous care than white beneficiaries.

4. For many common procedures, such as coronary artery bypass graft (CABG), percutaneous transluminal coronary angioplasty (PTCA), and knee and hip replacements, utilization rates are higher for white beneficiaries than for black beneficiaries, suggesting that beneficiaries of minority races are at risk of experiencing barriers to several referral-sensitive procedures.

5. The most important new knowledge gained from these analyses is that lower SES, in and of itself, is also a risk factor for all Medicare population groups, including white beneficiaries.

6. Standardization of income across races showed that if the income distributions for black beneficiaries and white beneficiaries were equal, the racial differences in utilization rates for many services would decrease, although generally by only a modest amount. But, for some services, such as ambulatory physician visits, magnetic resonance imaging (MRI), and mammography, the standardization of income diminished appreciably the disparities by race -- indicating that low income among black beneficiaries plays a substantial role with regard to access to care for certain services.

7. The MFS has produced the kinds of shifts in payments that were anticipated.

8. For the vulnerable populations studied, no new barriers to care were found. However, there are continuing indications that many population groups face barriers to care.

9. Additional understanding is needed of barriers to care for vulnerable populations to further improve their access to care.

CONCERNS:

None.

RECOMMENDATIONS:

I recommend that you approve this report and transmit it to the President of the Senate and Speaker of the House of Representatives.

CONTACT PERSON:

Marian Gornick (410) 786-6687

Summary of Report to Congress
Monitoring the Impact of Medicare Physician Payment Reform on Utilization and Access

Released to Congress: September 19, 1995

This is the fifth annual report submitted to Congress in response to the Omnibus Budget Reconciliation Act of 1989 (Public Law 101-239), which amended the Social Security Act by adding Section 1848, "Payments for Physicians' services."

The 1995 annual report is an update or expanded version of the 1994 analyses. In addition, new analyses were reported that explore the effect of socioeconomic status on utilization patterns. The report consists of two sections. Part I summarizes the new analyses of the effect of income on access to care. Part II summarizes the updated studies. This report also addresses the following six policy issues:

- To what extent does health status--as measured by mortality rates--vary by race and income?
- To what extent does utilization of Medicare services vary by race and income?
- To what extent does standardization of income between black and white Medicare population groups reduce racial differences in mortality and utilization?
- Did the Medicare fee schedule (MFS) invoke the kinds of payment changes anticipated?
- Did payment reform present new barriers for vulnerable population groups?
- What has been the impact of the MFS on physicians' practices?

Major findings

- The rate of ambulatory physician visits declined 18 percent for white beneficiaries and 12 percent for black beneficiaries as income declined.
- Among black beneficiaries in the lowest income group, rates of referral-sensitive procedures such as percutaneous transluminal coronary angioplasty were 24 percent lower than the rates for black beneficiaries in the highest income quartile.
- Among white beneficiaries in the lowest income quartile, the rate of hospitalization for hypertension was more than twice as high as the rate for beneficiaries in the highest quartile.
- Standardization of income across races showed that if the income distributions for black beneficiaries and white beneficiaries were equal, the racial differences in utilization rates for many services would decrease, although generally by only a modest amount.
- The MFS has produced the kinds of shifts in payment that were anticipated.
- For the vulnerable populations studied, no new barriers to care were found.

For additional information, contact Marian Gornick on 410-786-6686.

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